

Die Prozedur VARMAX

Anzahl Beobachtungen	168
Anzahl fehlender Paare	1

Einfache beschreibende Statistiken						
Variable	Typ	N	Mittelwert	Standard Abweichung	Min	Max
costs_num	Abhängig	169	6157.31786	19763.60026	0.00000	166958.70000
cpi_logfd	Abhängig	168	0.00147	0.00410	-0.01053	0.01791
pri_num	Abhängig	169	0.00045	0.00802	-0.02062	0.02289

Granger-Kausalität-Wald-Test			
Test	DF	Chi-Quadrat	Pr > ChiSq
1	8	2.65	0.9545
2	8	5.91	0.6578
3	8	16.09	0.0411

Test 1: Gruppe 1 Variablen:	costs_num
Gruppe 2 Variablen:	cpi_logfd

Test 2: Gruppe 1 Variablen:	costs_num
Gruppe 2 Variablen:	pri_num

Test 3: Gruppe 1 Variablen:	pri_num
Gruppe 2 Variablen:	cpi_logfd

Kleinstes Informationskriterium basierend auf HQC					
Lag	MA0	MA1	MA2	MA3	MA4
AR 0	-0.826461	-1.336814	-1.249149	-1.158125	-1.030748
AR 1	-1.229516	-1.834515	-1.704511	-1.610739	-1.506172
AR 2	-1.190467	-1.730208	-1.587804	-1.461692	-1.350331
AR 3	-1.050522	-1.61739	-1.449192	-1.317351	-1.201629
AR 4	-0.886657	-1.466346	-1.29315	-1.172793	-1.0937

Die Prozedur VARMAX

Modelltyp	VAR(8)
Schätzmethode	Kleinste Quadrateschätzer

Konstantenschätzer	
Variable	Konstant
costs_num	4510.55122
cpi_logfd	0.00152
pri_num	0.00152

AR-Koeffizientenschätzer				
Lag	Variable	costs_num	cpi_logfd	pri_num
1	costs_num	0.24891	-387913.2006	-223457.3603
	cpi_logfd	-0.00000	-0.08588	0.04840
	pri_num	0.00000	-0.07146	0.29376
2	costs_num	-0.02465	-94400.40731	68498.14933
	cpi_logfd	-0.00000	0.06799	-0.05663

AR-Koeffizientenschätzer				
Lag	Variable	costs_num	cpi_logfd	pri_num
	pri_num	0.00000	0.09188	0.27927
3	costs_num	0.07032	105720.73949	453300.59674
	cpi_logfd	-0.00000	0.00834	-0.04760
	pri_num	0.00000	0.16675	0.08804
4	costs_num	0.08293	278269.14274	-196445.9054
	cpi_logfd	0.00000	0.04863	0.04669
	pri_num	-0.00000	0.07929	-0.00029
5	costs_num	-0.09191	106596.96818	-48807.62067
	cpi_logfd	0.00000	0.11440	-0.06172
	pri_num	0.00000	-0.07901	0.06421
6	costs_num	0.00794	-52851.46576	126935.84088
	cpi_logfd	-0.00000	-0.08240	0.00962
	pri_num	-0.00000	-0.26527	0.13320
7	costs_num	-0.02184	-163719.8136	137930.57385
	cpi_logfd	-0.00000	0.12721	-0.05061
	pri_num	-0.00000	-0.30887	-0.06273
8	costs_num	-0.00999	-266609.9194	-322798.5728
	cpi_logfd	0.00000	-0.01363	0.09440
	pri_num	-0.00000	-0.30687	0.00537

Schematische Darstellung der Parameterschätzer									
Variable/Lag	C	AR1	AR2	AR3	AR4	AR5	AR6	AR7	AR8
costs_num	.	+..
cpi_logfd	+
pri_num	.	..+	..+-	..-	..-
+ ist > 2*Std.fehler, - ist < -2*Std.fehler, . ist zwischen, * ist N/A									

Modellparameterschätzwerte						
Gleichung	Parameter	Schätzung	Standard Fehler	t-Wert	Pr > t	Variable
costs_num	CONST1	4510.55122	2314.05118	1.95	0.0533	1
	AR1_1_1	0.24891	0.08504	2.93	0.0040	costs_num(t-1)
	AR1_1_2	-387913.2006	325344.16768	-1.19	0.2352	cpi_logfd(t-1)
	AR1_1_3	-223457.3603	224611.13462	-0.99	0.3216	pri_num(t-1)
	AR2_1_1	-0.02465	0.06801	-0.36	0.7175	costs_num(t-2)
	AR2_1_2	-94400.40731	326329.43462	-0.29	0.7728	cpi_logfd(t-2)
	AR2_1_3	68498.14933	234581.33873	0.29	0.7707	pri_num(t-2)
	AR3_1_1	0.07032	0.06714	1.05	0.2968	costs_num(t-3)
	AR3_1_2	105720.73949	324792.63248	0.33	0.7453	cpi_logfd(t-3)
	AR3_1_3	453300.59674	239948.15325	1.89	0.0610	pri_num(t-3)
	AR4_1_1	0.08293	0.06721	1.23	0.2194	costs_num(t-4)
	AR4_1_2	278269.14274	322532.15291	0.86	0.3898	cpi_logfd(t-4)
	AR4_1_3	-196445.9054	237881.57888	-0.83	0.4104	pri_num(t-4)
	AR5_1_1	-0.09191	0.06776	-1.36	0.1772	costs_num(t-5)
	AR5_1_2	106596.96818	320977.59770	0.33	0.7403	cpi_logfd(t-5)
	AR5_1_3	-48807.62067	237820.86168	-0.21	0.8377	pri_num(t-5)
	AR6_1_1	0.00794	0.06826	0.12	0.9076	costs_num(t-6)
	AR6_1_2	-52851.46576	318250.44256	-0.17	0.8684	cpi_logfd(t-6)
	AR6_1_3	126935.84088	238505.56793	0.53	0.5955	pri_num(t-6)
	AR7_1_1	-0.02184	0.06832	-0.32	0.7497	costs_num(t-7)
	AR7_1_2	-163719.8136	324648.23527	-0.50	0.6149	cpi_logfd(t-7)
	AR7_1_3	137930.57385	231421.86945	0.60	0.5522	pri_num(t-7)

Modellparameterschätzwerte						
Gleichung	Parameter	Schätzung	Standard Fehler	t-Wert	Pr > t	Variable
	AR8_1_1	-0.00999	0.06709	-0.15	0.8819	costs_num(t-8)
	AR8_1_2	-266609.9194	324191.62676	-0.82	0.4123	cpi_logfd(t-8)
	AR8_1_3	-322798.5728	214935.82456	-1.50	0.1355	pri_num(t-8)
cpi_logfd	CONST2	0.00152	0.00060	2.52	0.0128	1
	AR1_2_1	-0.00000	0.00000	-0.73	0.4679	costs_num(t-1)
	AR1_2_2	-0.08588	0.08461	-1.02	0.3119	cpi_logfd(t-1)
	AR1_2_3	0.04840	0.05841	0.83	0.4088	pri_num(t-1)
	AR2_2_1	-0.00000	0.00000	-0.73	0.4678	costs_num(t-2)
	AR2_2_2	0.06799	0.08487	0.80	0.4244	cpi_logfd(t-2)
	AR2_2_3	-0.05663	0.06101	-0.93	0.3549	pri_num(t-2)
	AR3_2_1	-0.00000	0.00000	-0.51	0.6076	costs_num(t-3)
	AR3_2_2	0.00834	0.08447	0.10	0.9215	cpi_logfd(t-3)
	AR3_2_3	-0.04760	0.06240	-0.76	0.4469	pri_num(t-3)
	AR4_2_1	0.00000	0.00000	0.66	0.5135	costs_num(t-4)
	AR4_2_2	0.04863	0.08388	0.58	0.5630	cpi_logfd(t-4)
	AR4_2_3	0.04669	0.06186	0.75	0.4517	pri_num(t-4)
	AR5_2_1	0.00000	0.00000	0.40	0.6913	costs_num(t-5)
	AR5_2_2	0.11440	0.08347	1.37	0.1728	cpi_logfd(t-5)
	AR5_2_3	-0.06172	0.06185	-1.00	0.3201	pri_num(t-5)
	AR6_2_1	-0.00000	0.00000	-0.99	0.3243	costs_num(t-6)
	AR6_2_2	-0.08240	0.08276	-1.00	0.3212	cpi_logfd(t-6)
	AR6_2_3	0.00962	0.06203	0.16	0.8770	pri_num(t-6)
	AR7_2_1	-0.00000	0.00000	-0.05	0.9633	costs_num(t-7)
	AR7_2_2	0.12721	0.08443	1.51	0.1342	cpi_logfd(t-7)
	AR7_2_3	-0.05061	0.06018	-0.84	0.4019	pri_num(t-7)
	AR8_2_1	0.00000	0.00000	0.67	0.5064	costs_num(t-8)
	AR8_2_2	-0.01363	0.08431	-0.16	0.8718	cpi_logfd(t-8)
	AR8_2_3	0.09440	0.05590	1.69	0.0936	pri_num(t-8)
pri_num	CONST3	0.00152	0.00083	1.83	0.0689	1
	AR1_3_1	0.00000	0.00000	0.02	0.9854	costs_num(t-1)
	AR1_3_2	-0.07146	0.11690	-0.61	0.5421	cpi_logfd(t-1)
	AR1_3_3	0.29376	0.08071	3.64	0.0004	pri_num(t-1)
	AR2_3_1	0.00000	0.00000	0.51	0.6114	costs_num(t-2)
	AR2_3_2	0.09188	0.11725	0.78	0.4346	cpi_logfd(t-2)
	AR2_3_3	0.27927	0.08429	3.31	0.0012	pri_num(t-2)
	AR3_3_1	0.00000	0.00000	0.42	0.6721	costs_num(t-3)
	AR3_3_2	0.16675	0.11670	1.43	0.1553	cpi_logfd(t-3)
	AR3_3_3	0.08804	0.08622	1.02	0.3090	pri_num(t-3)
	AR4_3_1	-0.00000	0.00000	-1.12	0.2652	costs_num(t-4)
	AR4_3_2	0.07929	0.11589	0.68	0.4951	cpi_logfd(t-4)
	AR4_3_3	-0.00029	0.08547	-0.00	0.9973	pri_num(t-4)
	AR5_3_1	0.00000	0.00000	1.31	0.1912	costs_num(t-5)
	AR5_3_2	-0.07901	0.11533	-0.69	0.4945	cpi_logfd(t-5)
	AR5_3_3	0.06421	0.08545	0.75	0.4537	pri_num(t-5)
	AR6_3_1	-0.00000	0.00000	-0.40	0.6877	costs_num(t-6)
	AR6_3_2	-0.26527	0.11435	-2.32	0.0219	cpi_logfd(t-6)
	AR6_3_3	0.13320	0.08570	1.55	0.1224	pri_num(t-6)
	AR7_3_1	-0.00000	0.00000	-0.58	0.5650	costs_num(t-7)
	AR7_3_2	-0.30887	0.11665	-2.65	0.0091	cpi_logfd(t-7)
	AR7_3_3	-0.06273	0.08315	-0.75	0.4519	pri_num(t-7)
	AR8_3_1	-0.00000	0.00000	-2.63	0.0095	costs_num(t-8)

Modellparameterschätzwerte						
Gleichung	Parameter	Schätzung	Standard Fehler	t-Wert	Pr > t	Variable
	AR8_3_2	-0.30687	0.11649	-2.63	0.0094	cpi_logfd(t-8)
	AR8_3_3	0.00537	0.07723	0.07	0.9446	pri_num(t-8)

Kovarianzen der Innovationen			
Variable	costs_num	cpi_logfd	pri_num
costs_num	244490904.35	2.77729	-10.43017
cpi_logfd	2.77729	0.00002	-0.00000
pri_num	-10.43017	-0.00000	0.00003

Log-Likelihood	-32.6737
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Informationskriterien	
AICC	397.6551
HQC	328.4938
AIC	227.3474
SBC	476.4365
FPEC	0.192755

Kreuzkovarianzen der Residuen				
Lag	Variable	costs_num	cpi_logfd	pri_num
0	costs_num	206289200.54	2.34334	-8.80046
	cpi_logfd	2.34334	0.00001	-0.00000
	pri_num	-8.80046	-0.00000	0.00003
1	costs_num	3351898.9755	-1.04210	-0.26711
	cpi_logfd	0.04368	-0.00000	0.00000
	pri_num	1.99838	-0.00000	0.00000
2	costs_num	-15480766.82	7.30512	-1.20366
	cpi_logfd	-0.14731	-0.00000	0.00000
	pri_num	-2.92946	0.00000	0.00000
3	costs_num	20496130.237	-2.21335	-6.07601
	cpi_logfd	-1.25083	0.00000	0.00000
	pri_num	-3.94352	0.00000	0.00000
4	costs_num	13236091.753	0.45257	1.53098
	cpi_logfd	0.09197	-0.00000	-0.00000
	pri_num	1.67039	-0.00000	-0.00000
5	costs_num	-5619380.998	0.96675	-0.76159
	cpi_logfd	-1.46006	0.00000	0.00000
	pri_num	1.46096	-0.00000	-0.00000
6	costs_num	2618069.7486	-3.41732	0.37295
	cpi_logfd	1.68795	-0.00000	0.00000
	pri_num	-0.03538	-0.00000	-0.00000
7	costs_num	-4038586.258	1.12762	-2.41683
	cpi_logfd	-1.43545	-0.00000	0.00000
	pri_num	-2.46352	0.00000	-0.00000
8	costs_num	-7192247.338	2.78003	8.13411
	cpi_logfd	-1.47237	0.00000	-0.00000
	pri_num	-3.75676	0.00000	0.00000
9	costs_num	17666714.341	4.87239	-0.38303
	cpi_logfd	2.46670	-0.00000	0.00000
	pri_num	1.17788	0.00000	0.00000

Kreuzkorrelationen der Residuen				
Lag	Variable	costs_num	cpi_logfd	pri_num
0	costs_num	1.00000	0.04368	-0.11873
	cpi_logfd	0.04368	1.00000	-0.08030
	pri_num	-0.11873	-0.08030	1.00000
1	costs_num	0.01625	-0.01942	-0.00360
	cpi_logfd	0.00081	-0.02418	0.01710
	pri_num	0.02696	-0.02870	0.03793
2	costs_num	-0.07504	0.13617	-0.01624
	cpi_logfd	-0.00275	-0.00660	0.01193
	pri_num	-0.03952	0.01399	0.03665
3	costs_num	0.09936	-0.04126	-0.08197
	cpi_logfd	-0.02332	0.00283	0.01053
	pri_num	-0.05320	0.03332	0.00081
4	costs_num	0.06416	0.00844	0.02065
	cpi_logfd	0.00171	-0.00684	-0.02355
	pri_num	0.02254	-0.01447	-0.07274
5	costs_num	-0.02724	0.01802	-0.01027
	cpi_logfd	-0.02722	0.00305	0.03246
	pri_num	0.01971	-0.00218	-0.05273
6	costs_num	0.01269	-0.06370	0.00503
	cpi_logfd	0.03146	-0.01845	0.03599
	pri_num	-0.00048	-0.00529	-0.06905
7	costs_num	-0.01958	0.02102	-0.03261
	cpi_logfd	-0.02676	-0.05888	0.02179
	pri_num	-0.03324	0.06663	-0.00941
8	costs_num	-0.03486	0.05182	0.10974
	cpi_logfd	-0.02745	0.01418	-0.01287
	pri_num	-0.05068	0.00166	0.07811
9	costs_num	0.08564	0.09082	-0.00517
	cpi_logfd	0.04598	-0.02260	0.09886
	pri_num	0.01589	0.01358	0.00380

Schematische Darstellung der Kreuzkorrelationen der Residuen										
Variable/Lag	0	1	2	3	4	5	6	7	8	9
costs_num	+.
cpi_logfd	. +
pri_num	. . +
+ ist > 2*Std.fehler, - ist < -2*Std.fehler, . ist zwischen										

Portmanteau-Test für Kreuzkorrelationen der Residuen			
Bis zu Lag	DF	Chi-Quadrat	Pr > ChiSq
9	9	25.97	0.0021

Univariates Modell ANOVA-Diagnose				
Variable	R-Quadrat	Standard Abweichung	F-Wert	Pr > F
costs_num	0.1470	15636.20492	0.97	0.5096
cpi_logfd	0.1301	0.00407	0.84	0.6791
pri_num	0.5885	0.00562	8.04	<.0001

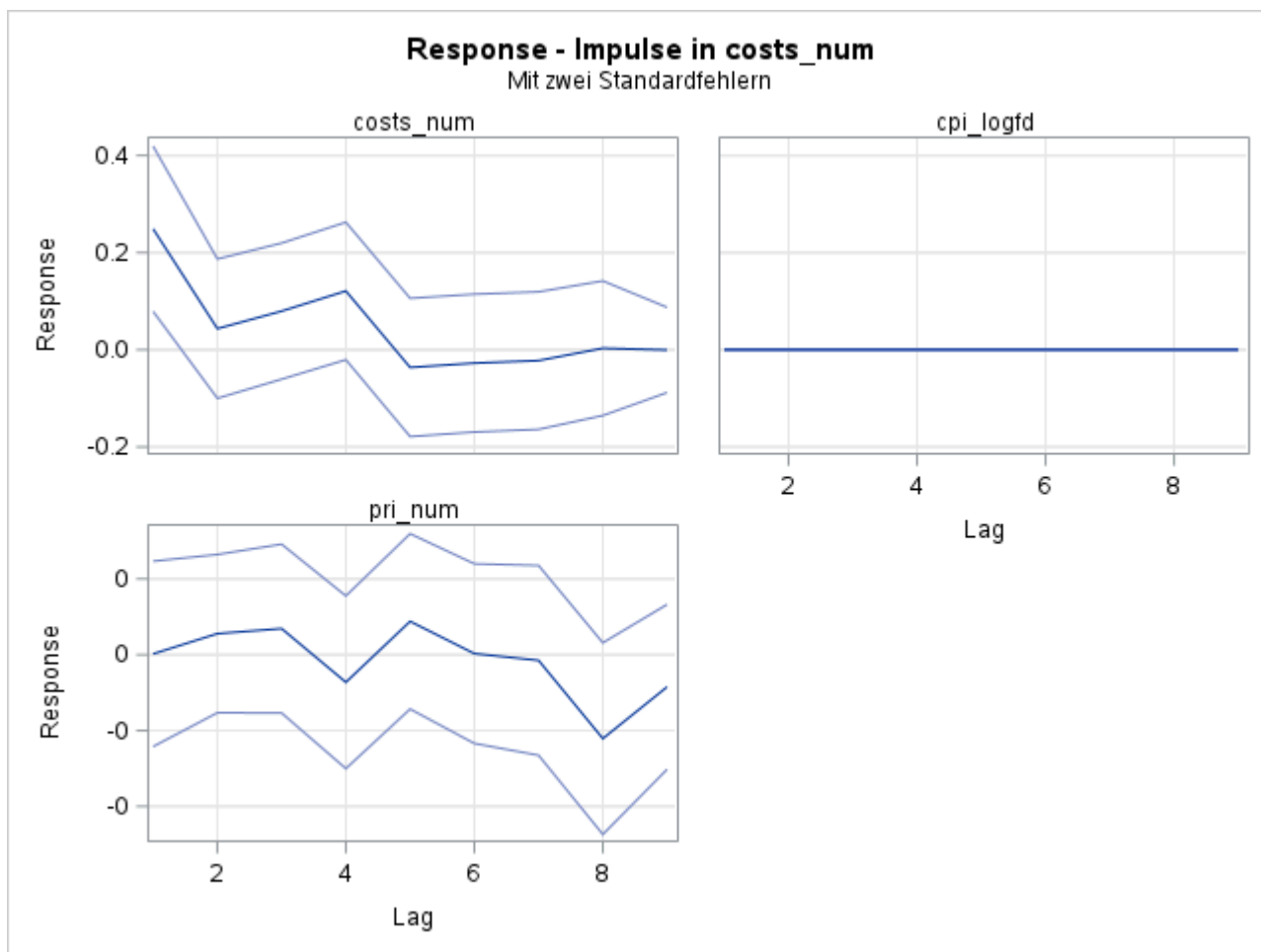
Univariates Modell Weißes-Rauschen-Diagnose					
Variable	Durbin Watson	Normalität		ARCH	
		Chi-Quadrat	Pr > ChiSq	F-Wert	Pr > F
costs_num	1.96406	7249.42	<.0001	3.46	0.0648
cpi_logfd	2.03083	67.79	<.0001	0.02	0.8830
pri_num	1.92325	0.72	0.6969	0.03	0.8637

Univariates Modell AR-Diagnosen								
Variable	AR1		AR2		AR3		AR4	
	F-Wert	Pr > F	F-Wert	Pr > F	F-Wert	Pr > F	F-Wert	Pr > F
costs_num	0.04	0.8385	0.49	0.6126	0.84	0.4764	0.73	0.5747
cpi_logfd	0.09	0.7601	0.03	0.9666	0.02	0.9951	0.02	0.9992
pri_num	0.23	0.6348	0.20	0.8220	0.14	0.9329	0.33	0.8585

Orthogonalisierte Impuls-Response				
Lag	Variable Response\Impuls	costs_num	cpi_logfd	pri_num
0	costs_num	15636.20492	0.00000	0.00000
	cpi_logfd	0.00018	0.00406	0.00000
	pri_num	-0.00067	-0.00042	0.00556
1	costs_num	3972.12228	-1481.49484	-1242.99183
	cpi_logfd	-0.00030	-0.00037	0.00027
	pri_num	-0.00020	-0.00041	0.00163
2	costs_num	701.47798	-545.32370	-397.94151
	cpi_logfd	-0.00020	0.00034	-0.00024
	pri_num	-0.00001	0.00016	0.00201
3	costs_num	986.80453	-20.48660	2182.39227
	cpi_logfd	-0.00016	0.00006	-0.00020
	pri_num	0.00011	0.00049	0.00156
4	costs_num	1919.37247	736.50359	30.18202
	cpi_logfd	0.00011	0.00025	0.00013
	pri_num	-0.00040	0.00042	0.00118
5	costs_num	-552.70978	401.16465	4.09583
	cpi_logfd	0.00010	0.00040	-0.00045
	pri_num	0.00019	-0.00002	0.00133
6	costs_num	-552.80619	31.72896	1061.04465
	cpi_logfd	-0.00029	-0.00043	0.00000
	pri_num	-0.00023	-0.00097	0.00167
7	costs_num	-503.37934	-162.62332	1258.69293
	cpi_logfd	0.00002	0.00063	-0.00043
	pri_num	-0.00021	-0.00133	0.00082
8	costs_num	114.41321	-834.85730	-873.43839
	cpi_logfd	0.00007	-0.00021	0.00036
	pri_num	-0.00108	-0.00180	0.00119
9	costs_num	15.87286	19.56857	-193.59588
	cpi_logfd	0.00003	0.00012	-0.00016
	pri_num	-0.00047	-0.00079	0.00091

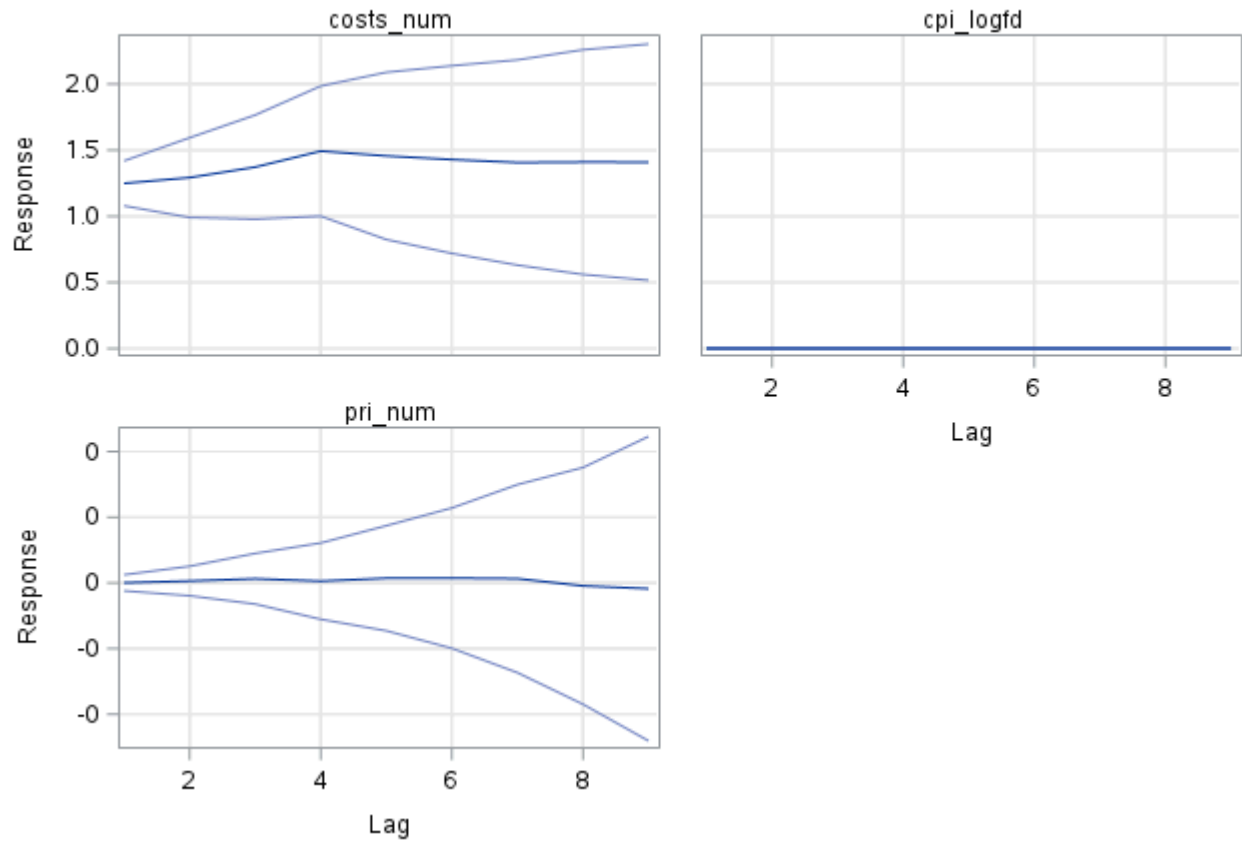
Prognosen						
Variable	Beob	Zeit	Prognose	Standard Fehler	95% Konfidenzgrenzen	
costs_num	169	FEB2019	-1405.31312	15636.20492	-32051.71162	29241.08538
	170	MAR2019	2940.69948	16248.33885	-28905.45948	34786.85844
	171	APR2019	3722.01730	16277.47899	-28181.25527	35625.28988

Prognosen						
Variable	Beob	Zeit	Prognose	Standard Fehler	95% Konfidenzgrenzen	
	172	MAY2019	2771.59626	16452.76150	-29475.22373	35018.41625
	173	JUN2019	4196.33377	16580.73280	-28301.30536	36693.97290
	174	JUL2019	4972.22278	16594.79250	-27552.97285	37497.41842
cpi_logfd	169	FEB2019	0.00171	0.00407	-0.00626	0.00968
	170	MAR2019	0.00092	0.00410	-0.00712	0.00896
	171	APR2019	0.00152	0.00413	-0.00657	0.00961
	172	MAY2019	0.00192	0.00414	-0.00619	0.01003
	173	JUN2019	0.00233	0.00415	-0.00579	0.01046
	174	JUL2019	0.00141	0.00419	-0.00681	0.00962
pri_num	169	FEB2019	-0.00153	0.00562	-0.01254	0.00948
	170	MAR2019	-0.00115	0.00587	-0.01265	0.01036
	171	APR2019	0.00026	0.00621	-0.01190	0.01243
	172	MAY2019	0.00016	0.00642	-0.01243	0.01274
	173	JUN2019	0.00210	0.00656	-0.01075	0.01495
	174	JUL2019	0.00154	0.00669	-0.01157	0.01466

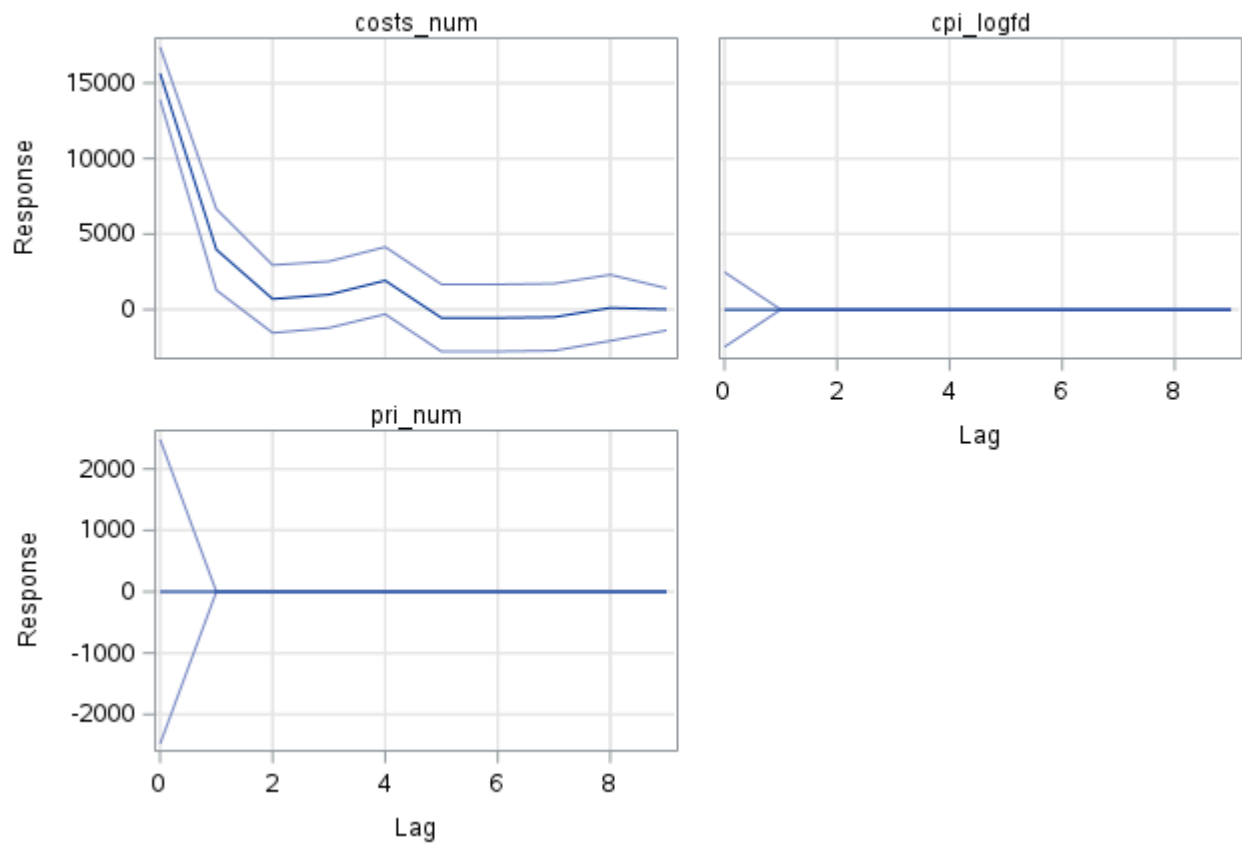


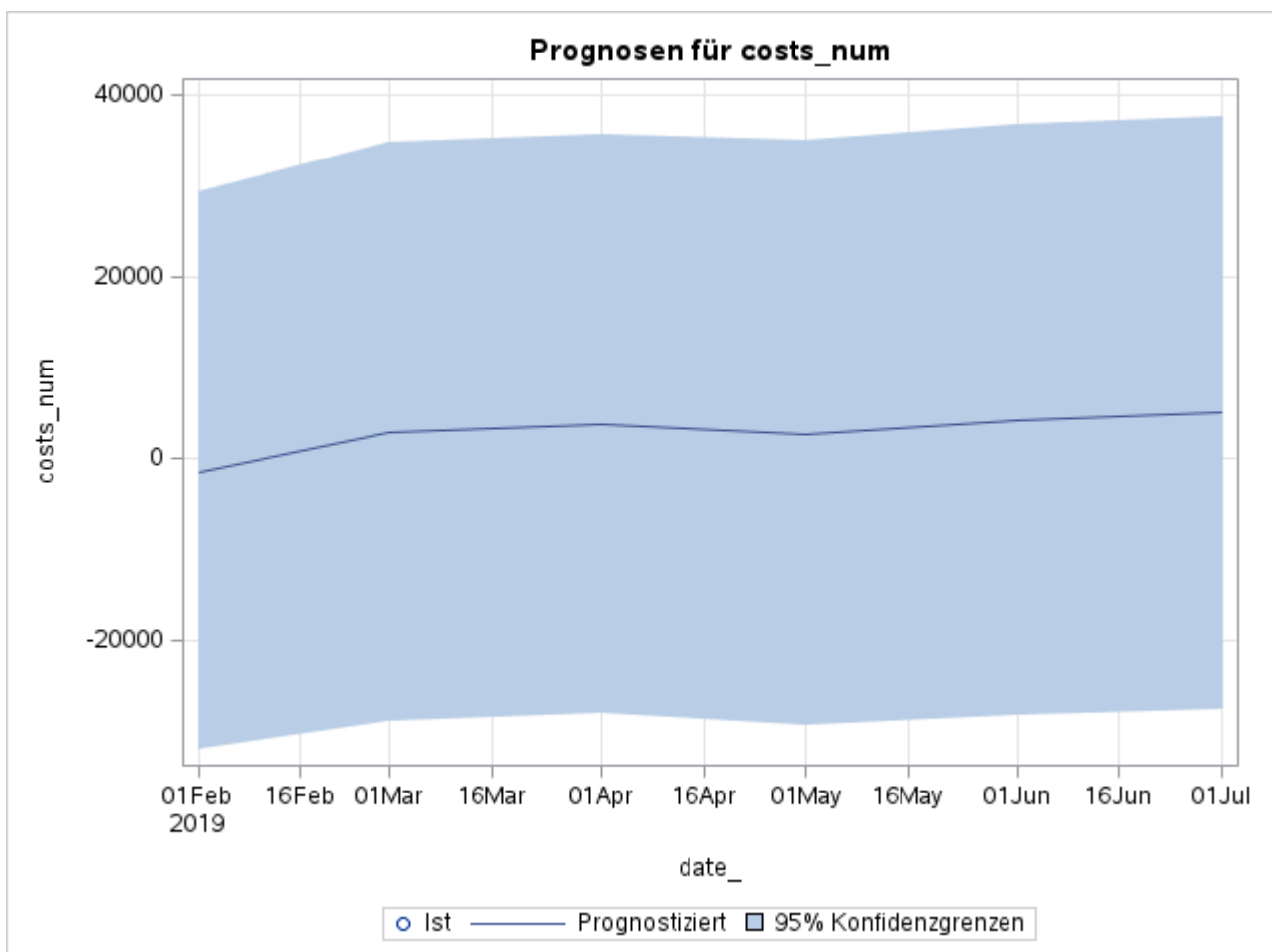
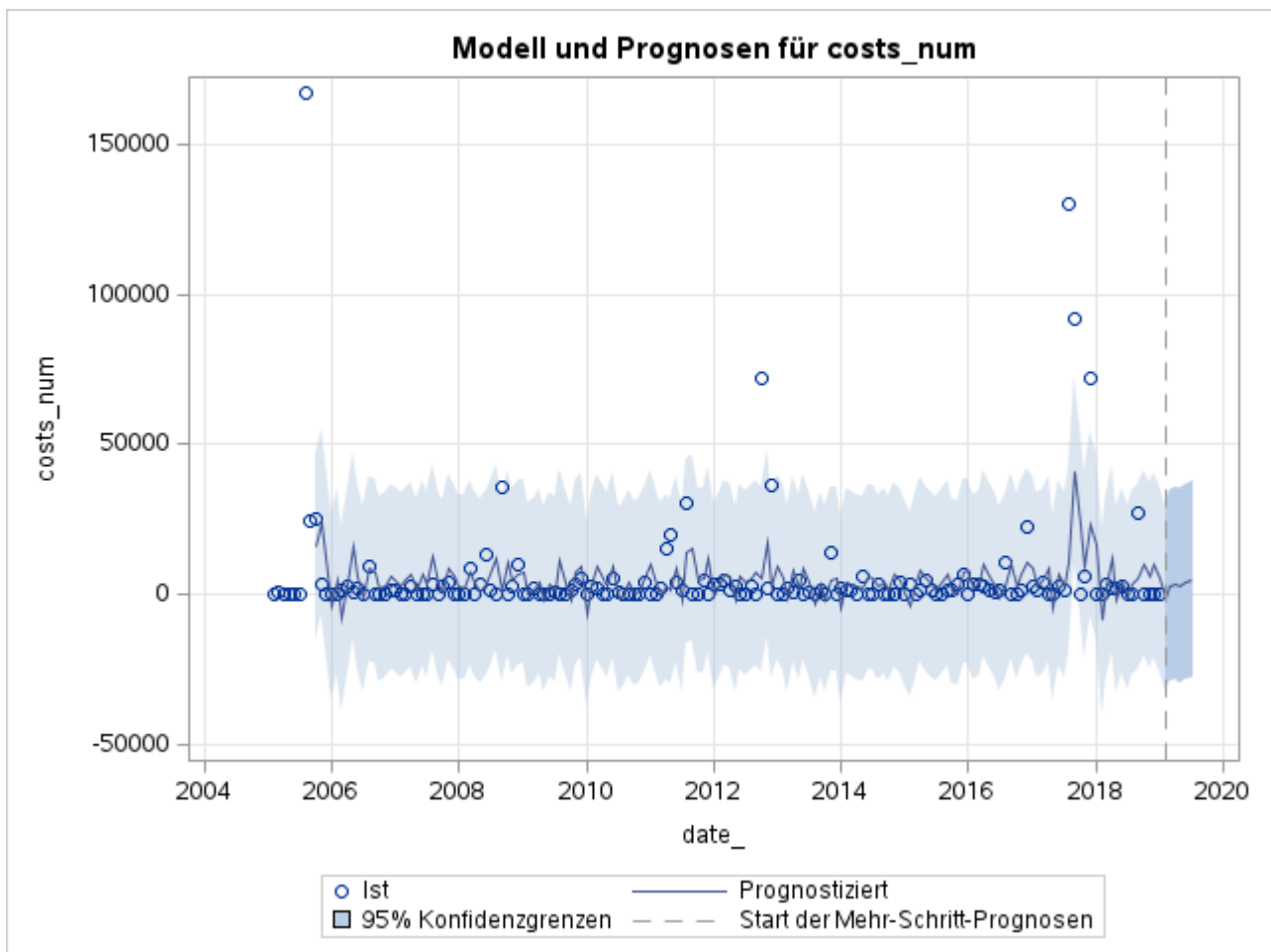
Akkumulierte Response - Impulse in costs_num

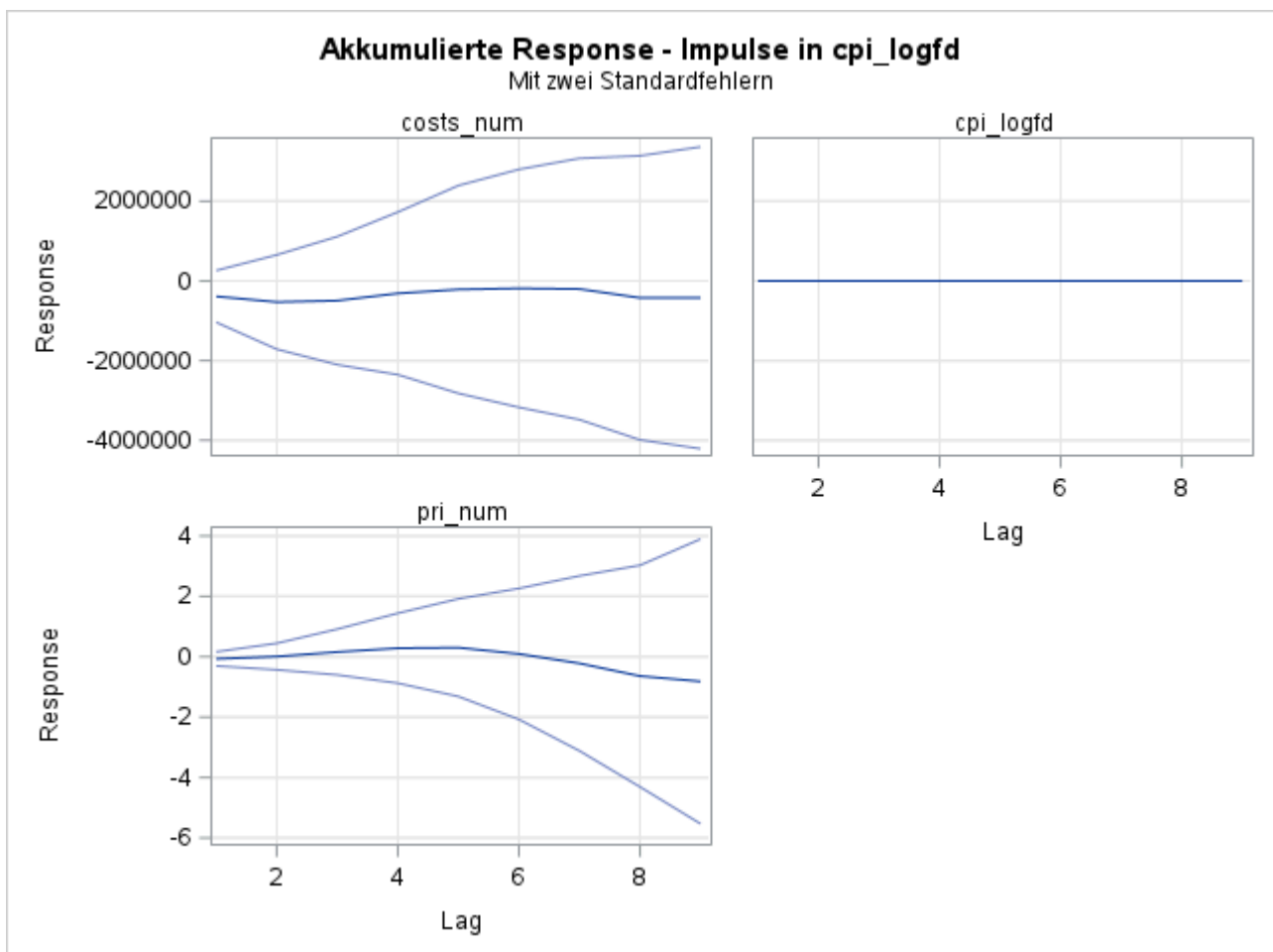
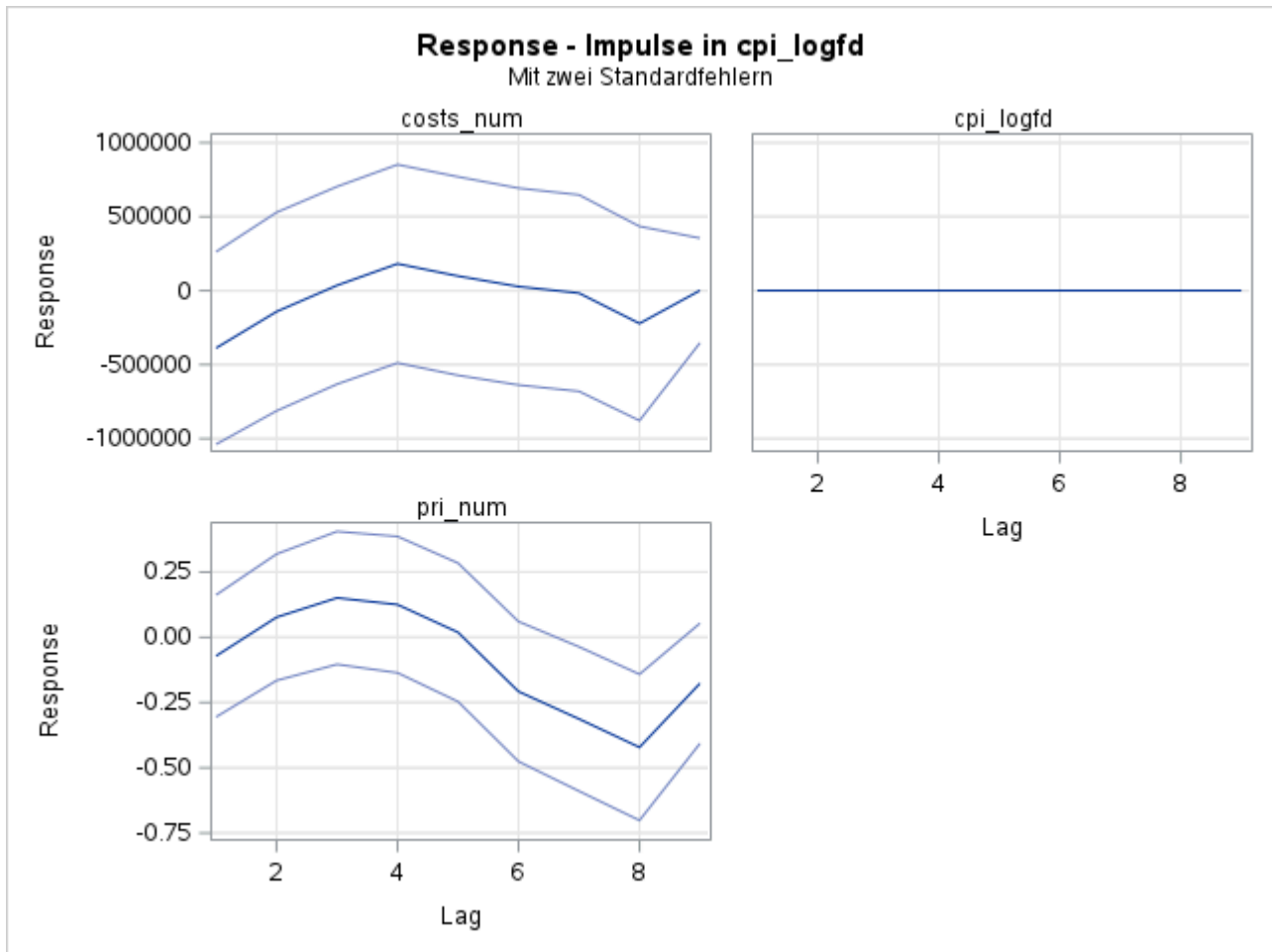
Mit zwei Standardfehlern

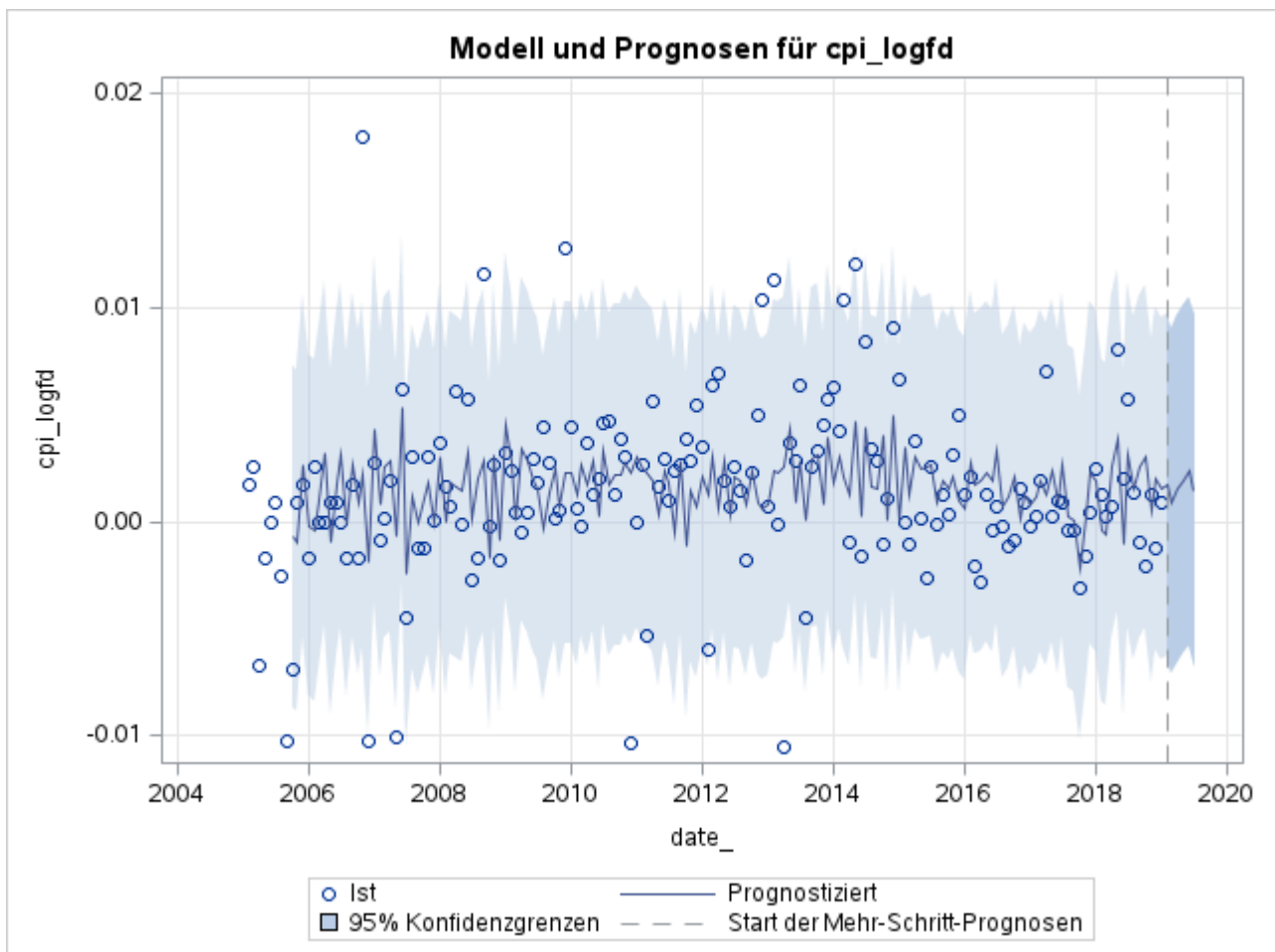
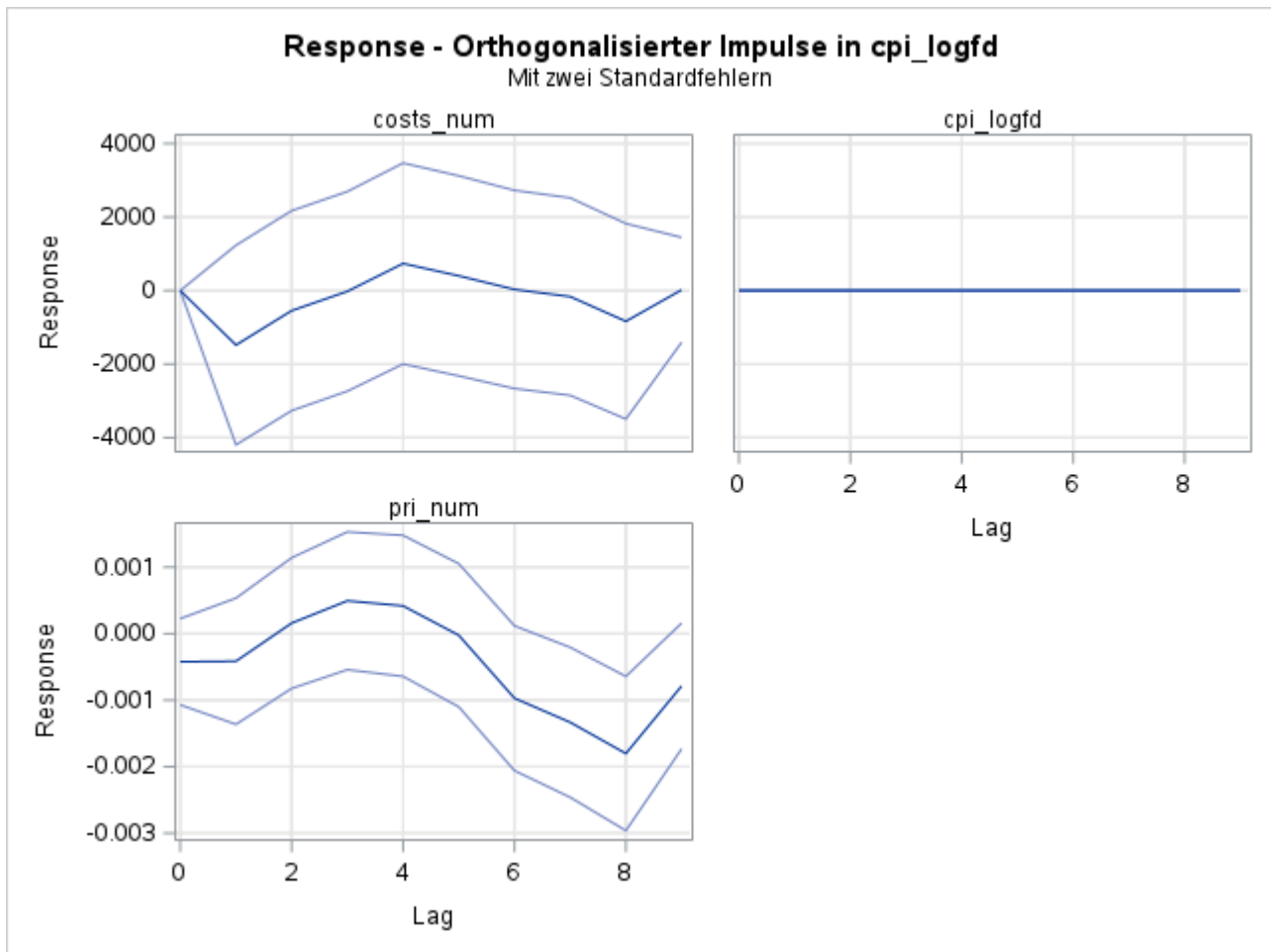
**Response - Orthogonalisierter Impulse in costs_num**

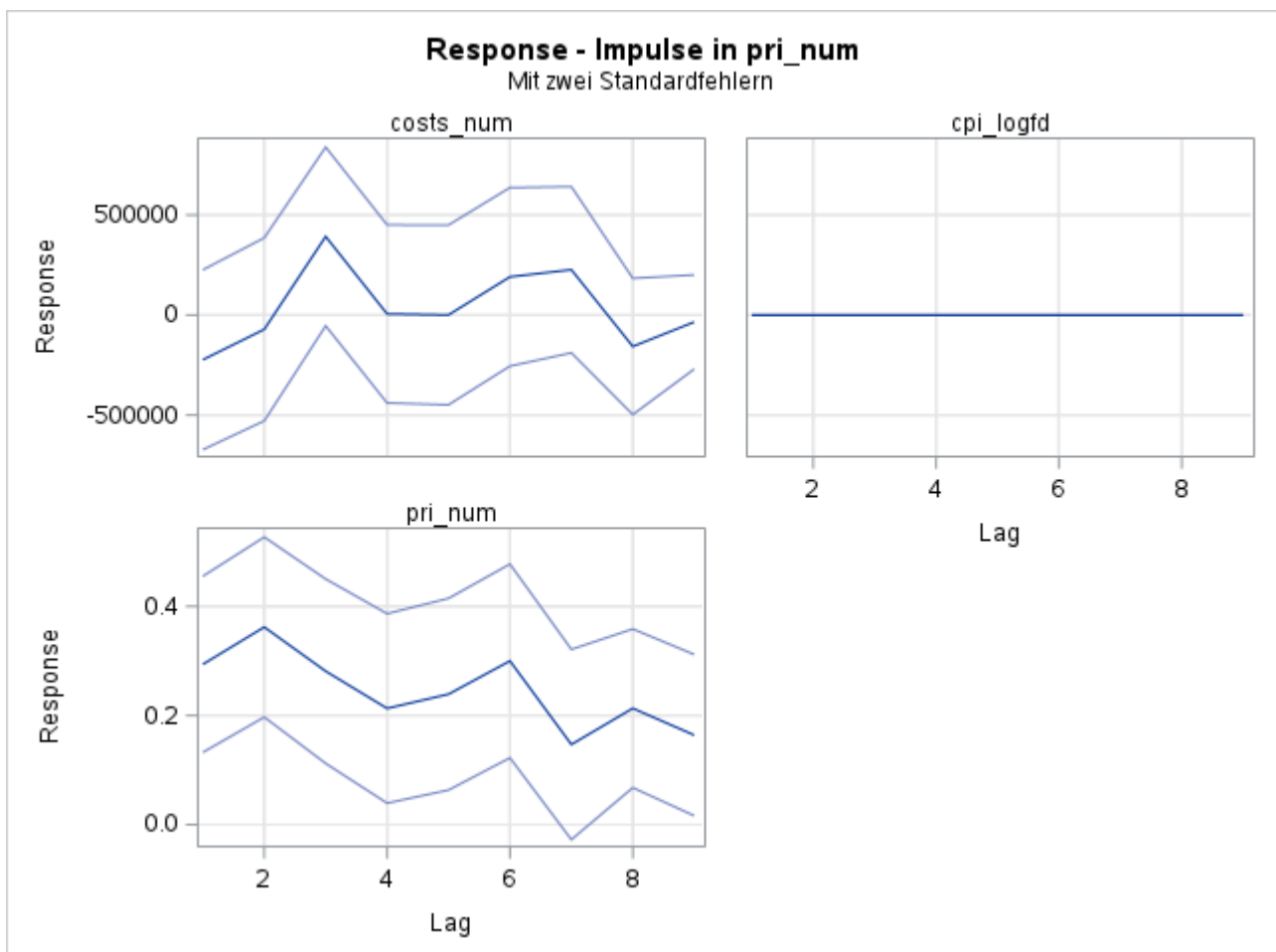
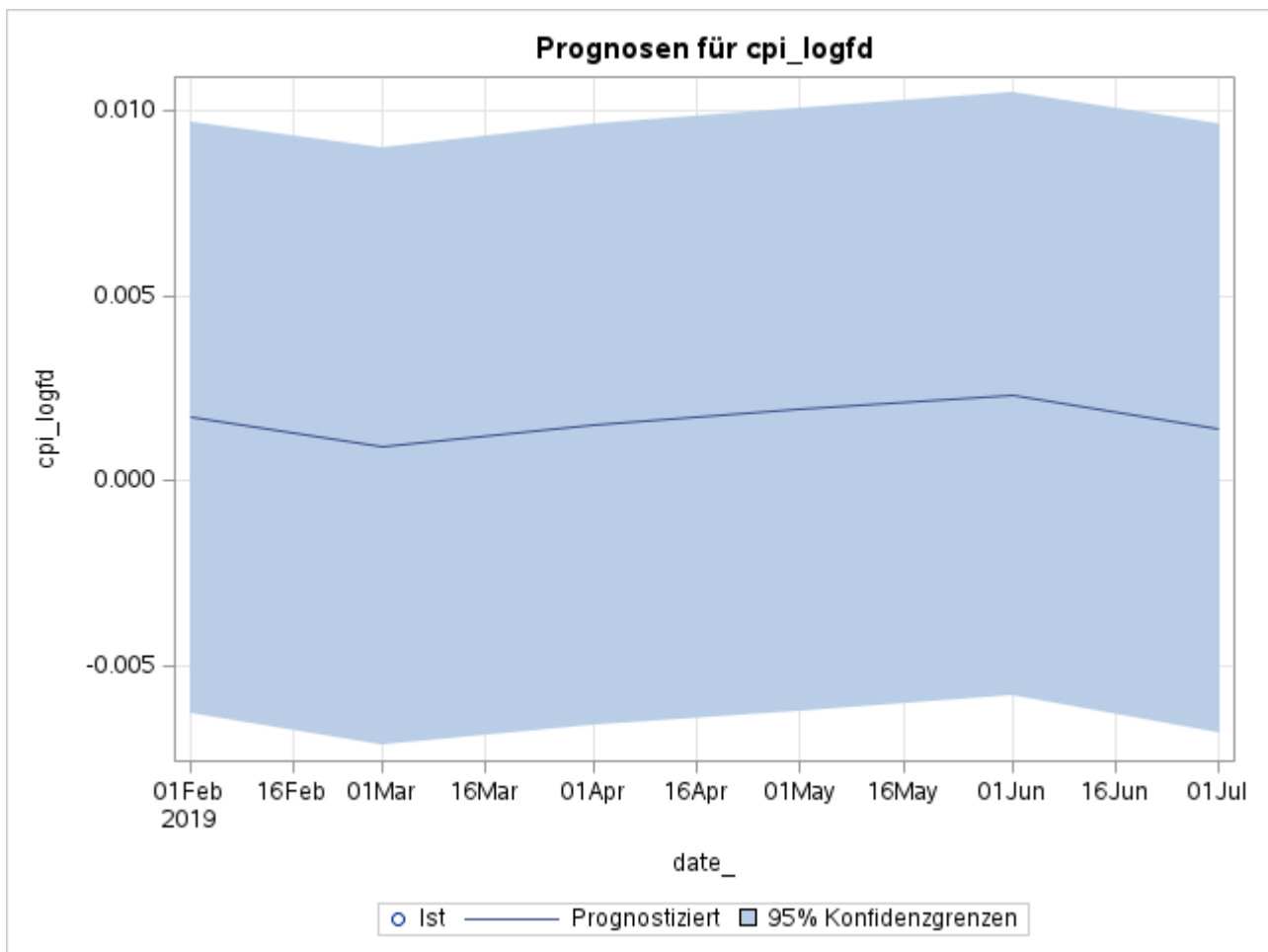
Mit zwei Standardfehlern





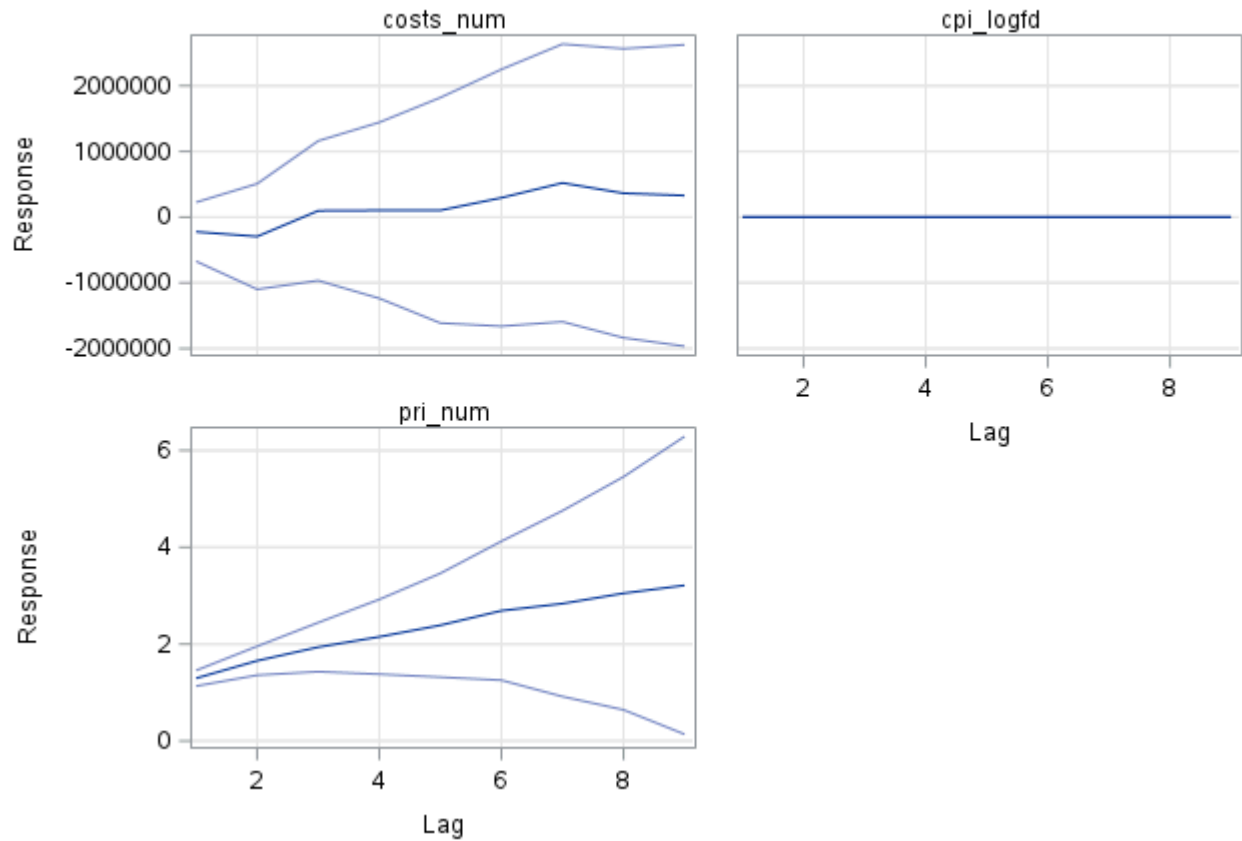






Akkumulierte Response - Impulse in pri_num

Mit zwei Standardfehlern



Response - Orthogonalisierter Impulse in pri_num

Mit zwei Standardfehlern

