VAR tables for historical data: Long-term interest rates

	OLS		MLE		UMLE		Rest MLE		Rest UMLE	
	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate
Coefficients										
Constant	3.11	0.1	3.11	0.1	3.26	0.12	2.99	0.02	2.99	0.02
	(1.349)	(0.122)	(1.387)	(0.125)	(1.359)	(0.112)	(1.351)	(0.202)	(1.333)	(0.052)
LR Mean	5.89	4.31	5.89	4.31	5.93	4.18	6.75	8.15	6.75	8.15
	(1.109)	(1.634)	(1.139)	(1.679)	(1.06)	(1.224)	(6.21)	(28.138)	(1.164)	(3.022)
Growth (-1)	0.41	0.01	0.41	0.01	0.41	0.01	0.41	0.01	0.41	0.01
	(0.08)	(0.007)	(0.082)	(0.007)	(0.081)	(0.007)	(0.115)	(0.003)	(0.116)	(0.004)
Int. rate (-1)	0.08	0.96	0.08	0.96	0.05	0.96	0.12	0.99	0.12	0.99
	(0.253)	(0.023)	(0.26)	(0.024)	(0.257)	(0.022)	(0.185)	(0.052)	(0.225)	(0.007)
Innov. covar.										
Growth	46.12		45.77		45.55		45.78		45.78	
			(5.79)		(5.735)		(8.773)		(8.782)	
Int. rate	0.69	0.38	0.68	0.37	0.67	0.37	0.69	0.38	0.69	0.38
			(0.375)	(0.047)	(0.371)	(0.047)	(0.235)	(0.095)	(0.231)	(0.096)
Log likelihood	564.4		564.4		569.4		565.3		571.4	

Table 1: 1-lag test VAR for USA. In restricted MLEs, mean difference is 1.4

	OLS		MLE		UMLE		Rest MLE		Rest UMLE	
	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate
Coefficients										
Constant	3.11	0.1	3.11	0.1	3.26	0.12	2.99	0.02	2.99	0.02
	(1.349)	(0.122)	(1.387)	(0.125)	(1.359)	(0.112)	(1.351)	(0.202)	(1.333)	(0.052)
LR Mean	5.89	4.31	5.89	4.31	5.93	4.18	6.75	8.15	6.75	8.15
	(1.109)	(1.634)	(1.139)	(1.679)	(1.06)	(1.224)	(6.21)	(28.138)	(1.164)	(3.022)
Growth (-1)	0.41	0.01	0.41	0.01	0.41	0.01	0.41	0.01	0.41	0.01
	(0.08)	(0.007)	(0.082)	(0.007)	(0.081)	(0.007)	(0.115)	(0.003)	(0.116)	(0.004)
Int. rate (-1)	0.08	0.96	0.08	0.96	0.05	0.96	0.12	0.99	0.12	0.99
	(0.253)	(0.023)	(0.26)	(0.024)	(0.257)	(0.022)	(0.185)	(0.052)	(0.225)	(0.007)
Innov. covar.										
Growth	46.12		45.77		45.55		45.78		45.78	
			(5.79)		(5.735)		(8.773)		(8.782)	
Int. rate	0.69	0.38	0.68	0.37	0.67	0.37	0.69	0.38	0.69	0.38
			(0.375)	(0.047)	(0.371)	(0.047)	(0.235)	(0.095)	(0.231)	(0.096)
Log likelihood	564.4		564.4		569.4		565.3		571.4	

Table 2: 1-lag test VAR for USA. In restricted MLEs, mean difference is 1.4 Using AIC opimal lag length 1

	OLS		MLE		UMLE		Rest MLE		Rest UMLE	
	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate
Coefficients										
Constant	3.59	0.12	3.59	0.12	3.57	0.13	3.57	0.05	3.57	0.05
	(1.436)	(0.125)	(1.534)	(0.133)	(1.516)	(0.124)	(1.576)	(0.194)	(1.568)	(0.101)
LR Mean	5.96	4.5	5.96	4.5	5.83	4.33	6.71	7.38	6.71	7.38
	(0.952)	(1.255)	(1.017)	(1.341)	(0.956)	(1.102)	(3.173)	(11.225)	(0.963)	(3.404)
Growth (-1)	0.41	0.01	0.41	0.01	0.41	0.01	0.41	0.01	0.41	0.01
	(0.089)	(0.008)	(0.095)	(0.008)	(0.094)	(0.008)	(0.129)	(0.004)	(0.128)	(0.004)
Int. rate (-1)	0.08	1.16	0.08	1.16	0.06	1.15	0.09	1.17	0.09	1.17
	(0.994)	(0.086)	(1.062)	(0.092)	(1.059)	(0.091)	(0.687)	(0.194)	(0.663)	(0.19)
Growth (-2)	0.05	0.01	0.05	0.01	0.05	0.01	0.05	0.01	0.05	0.01
	(0.095)	(0.008)	(0.101)	(0.009)	(0.101)	(0.009)	(0.155)	(0.005)	(0.155)	(0.005)
Int. rate (-2)	-1.05	-0.42	-1.05	-0.42	-1.04	-0.42	-1.05	-0.42	-1.05	-0.42
	(1.497)	(0.13)	(1.6)	(0.139)	(1.596)	(0.138)	(0.964)	(0.294)	(0.957)	(0.294)
Growth (-3)	-0.12	0	-0.12	0	-0.12	0	-0.12	0	-0.12	0
	(0.095)	(0.008)	(0.101)	(0.009)	(0.101)	(0.009)	(0.141)	(0.006)	(0.14)	(0.006)
Int. rate (-3)	2.3	0.5	2.3	0.5	2.29	0.5	2.3	0.5	2.3	0.5
	(1.502)	(0.13)	(1.605)	(0.139)	(1.599)	(0.139)	(1.001)	(0.239)	(0.992)	(0.239)
Growth (-4)	-0.08	0	-0.08	0	-0.08	0	-0.08	0	-0.08	0
	(0.087)	(0.008)	(0.093)	(0.008)	(0.093)	(0.008)	(0.106)	(0.004)	(0.106)	(0.005)
Int. rate (-4)	-1.16	-0.28	-1.16	-0.28	-1.14	-0.28	-1.15	-0.27	-1.15	-0.27
	(1.001)	(0.087)	(1.07)	(0.093)	(1.065)	(0.092)	(0.592)	(0.159)	(0.588)	(0.158)
Innov. covar.										
Growth	44.71		44.37		44.14		44.37		44.37	
			(5.903)		(5.923)		(8.436)		(8.425)	
Int. rate	0.59	0.34	0.59	0.33	0.58	0.33	0.59	0.34	0.59	0.34
			(0.366)	(0.044)	(0.362)	(0.044)	(0.232)	(0.075)	(0.233)	(0.075)
Log likelihood	542.6		542.6		547.5		543.8		549.7	

Table 3: 4-lag test VAR for USA. In restricted MLEs, mean difference is 0.67

	OLS		MLE		UMLE		Rest MLE		Rest UMLE	
	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate
Coefficients										
Constant	-0.4	0.23	-0.4	0.23	-0.19	0.23	-1.35	0.02	-1.35	0.02
	(1.383)	(0.174)	(1.428)	(0.18)	(1.39)	(0.157)	(1.266)	(0.229)	(3.241)	(0.036)
LR Mean	5.41	5.36	5.41	5.36	4.96	4.89	-5.25	-2.25	-5.25	-2.25
	(2.796)	(2.009)	(2.888)	(2.075)	(2.268)	(1.602)	(72.733)	(52.949)	(6.488)	(1.986)
Growth (-1)	0.38	0.02	0.38	0.02	0.38	0.02	0.38	0.02	0.38	0.02
	(0.089)	(0.011)	(0.092)	(0.012)	(0.092)	(0.011)	(0.192)	(0.016)	(0.211)	(0.03)
Int. rate (-1)	0.7	0.94	0.7	0.94	0.67	0.94	0.84	0.97	0.84	0.97
	(0.244)	(0.031)	(0.252)	(0.032)	(0.249)	(0.029)	(0.283)	(0.052)	(0.65)	(0.031)
Innov. covar.										
Growth	42.75		42.38		42.38		42.56		42.56	
			(5.848)		(5.776)		(10.518)		(11.321)	
Int. rate	0.96	0.68	0.95	0.67	0.93	0.67	0.99	0.68	0.99	0.68
			(0.529)	(0.093)	(0.526)	(0.092)	(0.766)	(0.193)	(0.765)	(0.189)
Log likelihood	508.1		508.1		513.7		509		515.8	

Table 4: 1-lag test VAR for FRA. In restricted MLEs, mean difference is 3

	OLS		MLE		UMLE		Rest MLE		Rest UMLE	
	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate
Coefficients										
Constant	-0.4	0.23	-0.4	0.23	-0.19	0.23	-1.35	0.02	-1.35	0.02
	(1.383)	(0.174)	(1.428)	(0.18)	(1.39)	(0.157)	(1.266)	(0.229)	(3.241)	(0.036)
LR Mean	5.41	5.36	5.41	5.36	4.96	4.89	-5.25	-2.25	-5.25	-2.25
	(2.796)	(2.009)	(2.888)	(2.075)	(2.268)	(1.602)	(72.733)	(52.949)	(6.488)	(1.986)
Growth (-1)	0.38	0.02	0.38	0.02	0.38	0.02	0.38	0.02	0.38	0.02
	(0.089)	(0.011)	(0.092)	(0.012)	(0.092)	(0.011)	(0.192)	(0.016)	(0.211)	(0.03)
Int. rate (-1)	0.7	0.94	0.7	0.94	0.67	0.94	0.84	0.97	0.84	0.97
	(0.244)	(0.031)	(0.252)	(0.032)	(0.249)	(0.029)	(0.283)	(0.052)	(0.65)	(0.031)
Innov. covar.										
Growth	42.75		42.38		42.38		42.56		42.56	
			(5.848)		(5.776)		(10.518)		(11.321)	
Int. rate	0.96	0.68	0.95	0.67	0.93	0.67	0.99	0.68	0.99	0.68
			(0.529)	(0.093)	(0.526)	(0.092)	(0.766)	(0.193)	(0.765)	(0.189)
Log likelihood	508.1		508.1		513.7		509		515.8	

Table 5: 1-lag test VAR for FRA. In restricted MLEs, mean difference is 3 Using AIC opimal lag length 1

	OLS		MLE		UMLE		Rest MLE		Rest UMLE	
	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate
Coefficients										
Constant	0.15	0.26	0.15	0.26	0.02	0.26	-0.93	0.01	-0.93	0.01
	(1.458)	(0.182)	(1.578)	(0.197)	(1.548)	(0.179)	(1.571)	(0.235)	(1.653)	(0.039)
LR Mean	5.74	5.51	5.74	5.51	5.19	5.14	-7.71	-4.99	-7.71	-4.99
	(2.294)	(1.754)	(2.483)	(1.898)	(2.126)	(1.536)	(151.59)	(119.882)	(5.788)	(3.435)
Growth (-1)	0.37	0.01	0.37	0.01	0.37	0.01	0.37	0.01	0.37	0.01
	(0.096)	(0.012)	(0.104)	(0.013)	(0.104)	(0.013)	(0.211)	(0.014)	(0.201)	(0.012)
Int. rate (-1)	1.89	1.09	1.89	1.09	1.88	1.09	1.97	1.11	1.97	1.11
	(0.775)	(0.097)	(0.839)	(0.105)	(0.836)	(0.104)	(0.912)	(0.174)	(0.906)	(0.175)
Growth (-2)	0.03	0.02	0.03	0.02	0.03	0.02	0.03	0.02	0.03	0.02
	(0.102)	(0.013)	(0.111)	(0.014)	(0.11)	(0.014)	(0.166)	(0.019)	(0.164)	(0.019)
Int. rate (-2)	-1.51	-0.21	-1.51	-0.21	-1.5	-0.21	-1.51	-0.21	-1.51	-0.21
	(1.141)	(0.143)	(1.235)	(0.155)	(1.232)	(0.154)	(1.052)	(0.206)	(1.055)	(0.2)
Growth (-3)	0.01	-0.01	0.01	-0.01	0.01	-0.01	0.01	-0.01	0.01	-0.01
	(0.103)	(0.013)	(0.111)	(0.014)	(0.111)	(0.014)	(0.109)	(0.017)	(0.108)	(0.019)
Int. rate (-3)	0.79	0.02	0.79	0.02	0.78	0.02	0.78	0.02	0.78	0.02
	(1.14)	(0.143)	(1.234)	(0.154)	(1.231)	(0.154)	(0.695)	(0.137)	(0.706)	(0.138)
Growth (-4)	-0.05	0	-0.05	0	-0.05	0	-0.05	0	-0.05	0
	(0.097)	(0.012)	(0.105)	(0.013)	(0.105)	(0.013)	(0.122)	(0.014)	(0.109)	(0.015)
Int. rate (-4)	-0.52	0.03	-0.52	0.03	-0.52	0.03	-0.43	0.05	-0.43	0.05
	(0.763)	(0.095)	(0.826)	(0.103)	(0.824)	(0.103)	(0.511)	(0.128)	(0.547)	(0.123)
Innov. covar.										
Growth	42.02		41.64		41.52		41.86		41.86	
			(6.107)		(5.985)		(10.844)		(10.794)	
Int. rate	0.82	0.66	0.81	0.65	0.8	0.65	0.86	0.66	0.86	0.66
			(0.547)	(0.096)	(0.541)	(0.095)	(0.769)	(0.175)	(0.778)	(0.167)
Log likelihood	492.4		492.4		497.7		493.5		500.3	

Table 6: 4-lag test VAR for FRA. In restricted MLEs, mean difference is 2.72

	OLS		MLE		UMLE		Rest MLE		Rest UMLE	
	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate
Coefficients										
Constant	0.39	0.11	0.39	0.11	0.44	0.1	-0.12	0	-0.12	0
	(0.797)	(0.107)	(0.819)	(0.11)	(0.778)	(0.095)	(0.796)	(0.148)	(0.337)	(0.022)
LR Mean	5.77	5.24	5.77	5.24	5.03	4.5	-14.16	-12.24	-14.16	-12.24
	(2.835)	(2.438)	(2.914)	(2.505)	(2.13)	(1.78)	(889.063)	(783.366)	(5.387)	(4.548)
Growth (-1)	0.59	0.03	0.59	0.03	0.58	0.03	0.59	0.03	0.59	0.03
	(0.072)	(0.01)	(0.074)	(0.01)	(0.073)	(0.01)	(0.077)	(0.008)	(0.069)	(0.006)
Int. rate (-1)	0.38	0.95	0.38	0.95	0.37	0.95	0.47	0.97	0.47	0.97
	(0.151)	(0.02)	(0.155)	(0.021)	(0.152)	(0.019)	(0.158)	(0.033)	(0.077)	(0.006)
Innov. covar.										
Growth	21.15		20.99		20.85		21.06		21.06	
			(2.655)		(2.622)		(7.683)		(7.619)	
Int. rate	0.22	0.38	0.21	0.38	0.21	0.38	0.23	0.38	0.23	0.38
			(0.253)	(0.048)	(0.25)	(0.048)	(0.156)	(0.152)	(0.165)	(0.144)
Log likelihood	514.8		514.8		519.8		515.6		522.5	

Table 7: 1-lag test VAR for GBR. In restricted MLEs, mean difference is 1.92

	OLS		MLE		UMLE		Rest MLE		Rest UMLE	
	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate
Coefficients										
Constant	0.58	0.1	0.58	0.1	0.47	0.09	0.21	-0.01	0.21	-0.01
	(0.802)	(0.103)	(0.857)	(0.11)	(0.826)	(0.094)	(0.835)	(0.134)	(NaN)	(NaN)
LR Mean	6.18	5.59	6.18	5.59	5.04	4.55	-210.03	-202.03	-210.03	-202.03
	(2.575)	(2.378)	(2.751)	(2.54)	(2.121)	(1.895)	(281650.269)	(270434.979)	(NaN)	(NaN)
Growth (-1)	0.57	0.03	0.57	0.03	0.56	0.03	0.57	0.03	0.57	0.03
	(0.087)	(0.011)	(0.093)	(0.012)	(0.093)	(0.012)	(0.102)	(0.01)	(NaN)	(NaN)
Int. rate (-1)	0.96	1.23	0.96	1.23	0.96	1.23	1.01	1.25	1.01	1.25
	(0.673)	(0.087)	(0.719)	(0.093)	(0.715)	(0.092)	(0.881)	(0.211)	(NaN)	(NaN)
Growth (-2)	0.11	-0.01	0.11	-0.01	0.11	-0.01	0.1	-0.01	0.1	-0.01
	(0.101)	(0.013)	(0.108)	(0.014)	(0.108)	(0.014)	(0.149)	(0.011)	(NaN)	(NaN)
Int. rate (-2)	-0.84	-0.38	-0.84	-0.38	-0.84	-0.38	-0.85	-0.38	-0.85	-0.38
	(1.086)	(0.14)	(1.161)	(0.15)	(1.157)	(0.149)	(1.018)	(0.242)	(NaN)	(NaN)
Growth (-3)	-0.12	0.01	-0.12	0.01	-0.12	0.01	-0.12	0.01	-0.12	0.01
	(0.101)	(0.013)	(0.108)	(0.014)	(0.108)	(0.014)	(0.116)	(0.009)	(NaN)	(NaN)
Int. rate (-3)	1.11	-0.1	1.11	-0.1	1.1	-0.1	1.1	-0.1	1.1	-0.1
	(1.087)	(0.14)	(1.162)	(0.15)	(1.157)	(0.149)	(0.926)	(0.198)	(NaN)	(NaN)
Growth (-4)	-0.12	0.01	-0.12	0.01	-0.12	0.01	-0.12	0.01	-0.12	0.01
	(0.089)	(0.012)	(0.096)	(0.012)	(0.095)	(0.012)	(0.156)	(0.008)	(NaN)	(NaN)
Int. rate (-4)	-0.7	0.19	-0.7	0.19	-0.7	0.19	-0.66	0.2	-0.66	0.2
	(0.662)	(0.085)	(0.707)	(0.091)	(0.703)	(0.091)	(0.588)	(0.126)	(NaN)	(NaN)
Innov. covar.										
Growth	20.18		20.02		19.92		20.18		20.18	
			(2.664)		(2.639)		(6.692)			
Int. rate	0.24	0.34	0.24	0.33	0.24	0.33	0.25	0.34	0.25	0.34
			(0.244)	(0.044)	(0.242)	(0.044)	(0.24)	(0.125)		
Log likelihood	491.7		491.7		496.7		492.5		NaN	

Table 8: 4-lag test VAR for GBR. In restricted MLEs, mean difference is 1.4 Using AIC opimal lag length 4

	OLS		MLE		UMLE		Rest MLE		Rest UMLE	
	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate
Coefficients										
Constant	0.58	0.1	0.58	0.1	0.47	0.09	0.21	-0.01	0.21	-0.01
	(0.802)	(0.103)	(0.857)	(0.11)	(0.826)	(0.094)	(0.835)	(0.134)	(NaN)	(NaN)
LR Mean	6.18	5.59	6.18	5.59	5.04	4.55	-210.03	-202.03	-210.03	-202.03
	(2.575)	(2.378)	(2.751)	(2.54)	(2.121)	(1.895)	(281650.269)	(270434.979)	(NaN)	(NaN)
Growth (-1)	0.57	0.03	0.57	0.03	0.56	0.03	0.57	0.03	0.57	0.03
	(0.087)	(0.011)	(0.093)	(0.012)	(0.093)	(0.012)	(0.102)	(0.01)	(NaN)	(NaN)
Int. rate (-1)	0.96	1.23	0.96	1.23	0.96	1.23	1.01	1.25	1.01	1.25
	(0.673)	(0.087)	(0.719)	(0.093)	(0.715)	(0.092)	(0.881)	(0.211)	(NaN)	(NaN)
Growth (-2)	0.11	-0.01	0.11	-0.01	0.11	-0.01	0.1	-0.01	0.1	-0.01
	(0.101)	(0.013)	(0.108)	(0.014)	(0.108)	(0.014)	(0.149)	(0.011)	(NaN)	(NaN)
Int. rate (-2)	-0.84	-0.38	-0.84	-0.38	-0.84	-0.38	-0.85	-0.38	-0.85	-0.38
	(1.086)	(0.14)	(1.161)	(0.15)	(1.157)	(0.149)	(1.018)	(0.242)	(NaN)	(NaN)
Growth (-3)	-0.12	0.01	-0.12	0.01	-0.12	0.01	-0.12	0.01	-0.12	0.01
	(0.101)	(0.013)	(0.108)	(0.014)	(0.108)	(0.014)	(0.116)	(0.009)	(NaN)	(NaN)
Int. rate (-3)	1.11	-0.1	1.11	-0.1	1.1	-0.1	1.1	-0.1	1.1	-0.1
	(1.087)	(0.14)	(1.162)	(0.15)	(1.157)	(0.149)	(0.926)	(0.198)	(NaN)	(NaN)
Growth (-4)	-0.12	0.01	-0.12	0.01	-0.12	0.01	-0.12	0.01	-0.12	0.01
	(0.089)	(0.012)	(0.096)	(0.012)	(0.095)	(0.012)	(0.156)	(0.008)	(NaN)	(NaN)
Int. rate (-4)	-0.7	0.19	-0.7	0.19	-0.7	0.19	-0.66	0.2	-0.66	0.2
	(0.662)	(0.085)	(0.707)	(0.091)	(0.703)	(0.091)	(0.588)	(0.126)	(NaN)	(NaN)
Innov. covar.										
Growth	20.18		20.02		19.92		20.18		20.18	
			(2.664)		(2.639)		(6.692)			
Int. rate	0.24	0.34	0.24	0.33	0.24	0.33	0.25	0.34	0.25	0.34
			(0.244)	(0.044)	(0.242)	(0.044)	(0.24)	(0.125)		
Log likelihood	491.7		491.7		496.7		492.5		NaN	

Table 9: 4-lag test VAR for GBR. In restricted MLEs, mean difference is 1.4

	OLS		MLE		UMLE		Rest MLE		Rest UMLE	
	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate
Coefficients										
Constant	2.04	0.34	2.04	0.34	1.74	0.36	2.38	0.1	2.38	0.1
	(1.673)	(0.219)	(1.722)	(0.226)	(1.703)	(0.211)	(1.318)	(0.232)	(1.388)	(0.102)
LR Mean	6.51	5.24	6.51	5.24	6.08	5.04	6.2	8.05	6.2	8.05
	(1.484)	(0.902)	(1.528)	(0.929)	(1.538)	(0.824)	(2.588)	(9.737)	(2.686)	(2.549)
Growth (-1)	0.62	0.01	0.62	0.01	0.63	0.01	0.63	0.01	0.63	0.01
	(0.07)	(0.009)	(0.072)	(0.009)	(0.072)	(0.009)	(0.106)	(0.018)	(0.106)	(0.017)
Int. rate (-1)	0.08	0.92	0.08	0.92	0.11	0.91	-0.01	0.98	-0.01	0.98
	(0.289)	(0.038)	(0.298)	(0.039)	(0.297)	(0.037)	(0.269)	(0.061)	(0.285)	(0.017)
Innov. covar.										
Growth	34.6		34.33		34.39		34.36		34.36	
			(4.507)		(4.503)		(9.879)		(9.795)	
Int. rate	0.02	0.59	0.02	0.59	0.03	0.59	0	0.61	0	0.61
			(0.417)	(0.077)	(0.415)	(0.077)	(0.493)	(0.13)	(0.491)	(0.122)
Log likelihood	538.3		538.3		543.6		540.4		546.7	

Table 10: 1-lag test VAR for DEU. In restricted MLEs, mean difference is 1.85

	OLS		MLE		UMLE		Rest MLE		Rest UMLE	
	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate
Coefficients										
Constant	2.04	0.34	2.04	0.34	1.74	0.36	2.38	0.1	2.38	0.1
	(1.673)	(0.219)	(1.722)	(0.226)	(1.703)	(0.211)	(1.318)	(0.232)	(1.388)	(0.102)
LR Mean	6.51	5.24	6.51	5.24	6.08	5.04	6.2	8.05	6.2	8.05
	(1.484)	(0.902)	(1.528)	(0.929)	(1.538)	(0.824)	(2.588)	(9.737)	(2.686)	(2.549)
Growth (-1)	0.62	0.01	0.62	0.01	0.63	0.01	0.63	0.01	0.63	0.01
	(0.07)	(0.009)	(0.072)	(0.009)	(0.072)	(0.009)	(0.106)	(0.018)	(0.106)	(0.017)
Int. rate (-1)	0.08	0.92	0.08	0.92	0.11	0.91	-0.01	0.98	-0.01	0.98
	(0.289)	(0.038)	(0.298)	(0.039)	(0.297)	(0.037)	(0.269)	(0.061)	(0.285)	(0.017)
Innov. covar.										
Growth	34.6		34.33		34.39		34.36		34.36	
			(4.507)		(4.503)		(9.879)		(9.795)	
Int. rate	0.02	0.59	0.02	0.59	0.03	0.59	0	0.61	0	0.61
			(0.417)	(0.077)	(0.415)	(0.077)	(0.493)	(0.13)	(0.491)	(0.122)
Log likelihood	538.3		538.3		543.6		540.4		546.7	

Table 11: 1-lag test VAR for DEU. In restricted MLEs, mean difference is 1.85 Using AIC opimal lag length 1

	OLS		MLE		UMLE		Rest MLE		Rest UMLE	
	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate
Coefficients										
Constant	1.85	0.28	1.85	0.28	1.78	0.28	-0.29	0.01	-0.29	0.01
	(1.777)	(0.238)	(1.909)	(0.256)	(1.845)	(0.239)	(1.296)	(0.206)	(0.925)	(0.088)
LR Mean	6.47	5.25	6.47	5.25	6.18	5.01	-5.63	-3.73	-5.63	-3.73
	(1.56)	(0.99)	(1.676)	(1.064)	(1.611)	(0.946)	(113.358)	(85.925)	(4.274)	(2.105)
Growth (-1)	0.76	0.01	0.76	0.01	0.75	0.01	0.77	0.01	0.77	0.01
	(0.089)	(0.012)	(0.096)	(0.013)	(0.095)	(0.013)	(0.134)	(0.021)	(0.132)	(0.019)
Int. rate (-1)	0.52	0.98	0.52	0.98	0.52	0.98	0.64	0.99	0.64	0.99
	(0.669)	(0.09)	(0.718)	(0.096)	(0.713)	(0.096)	(0.772)	(0.13)	(0.817)	(0.12)
Growth (-2)	-0.32	-0.01	-0.32	-0.01	-0.31	-0.01	-0.31	-0.01	-0.31	-0.01
	(0.108)	(0.014)	(0.116)	(0.015)	(0.115)	(0.015)	(0.124)	(0.02)	(0.126)	(0.02)
Int. rate (-2)	-0.89	-0.13	-0.89	-0.13	-0.88	-0.13	-0.86	-0.13	-0.86	-0.13
	(0.949)	(0.127)	(1.02)	(0.137)	(1.014)	(0.136)	(1.102)	(0.133)	(1.103)	(0.133)
Growth (-3)	0.4	0.01	0.4	0.01	0.39	0.01	0.4	0.01	0.4	0.01
	(0.108)	(0.014)	(0.116)	(0.015)	(0.115)	(0.015)	(0.139)	(0.014)	(0.136)	(0.013)
Int. rate (-3)	0.84	-0.09	0.84	-0.09	0.83	-0.09	0.85	-0.08	0.85	-0.08
	(0.948)	(0.127)	(1.018)	(0.136)	(1.012)	(0.136)	(0.823)	(0.155)	(0.827)	(0.155)
Growth (-4)	-0.2	0.02	-0.2	0.02	-0.2	0.02	-0.2	0.02	-0.2	0.02
	(0.091)	(0.012)	(0.097)	(0.013)	(0.097)	(0.013)	(0.097)	(0.013)	(0.096)	(0.013)
Int. rate (-4)	-0.37	0.15	-0.37	0.15	-0.36	0.15	-0.18	0.17	-0.18	0.17
	(0.67)	(0.09)	(0.72)	(0.096)	(0.714)	(0.096)	(0.458)	(0.096)	(0.441)	(0.096)
Innov. covar.										
Growth	31.4		31.15		30.87		31.53		31.53	
			(4.319)		(4.244)		(9.696)		(9.724)	
Int. rate	-0.03	0.56	-0.03	0.56	-0.03	0.56	0.02	0.57	0.02	0.57
			(0.409)	(0.078)	(0.404)	(0.077)	(0.45)	(0.126)	(0.457)	(0.124)
Log likelihood	516.3		516.3		521		517.7		524.1	

Table 12: 4-lag test VAR for DEU. In restricted MLEs, mean difference is 1.9

	OLS		MLE		UMLE		Rest MLE		Rest UMLE	
	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate
Coefficients										
Constant	3.42	0	3.42	0	3.55	0.02	3.1	-0.07	3.1	-0.07
	(1.293)	(0.117)	(1.329)	(0.121)	(1.28)	(0.108)	(1.285)	(0.196)	(1.341)	(0.08)
LR Mean	6.62	4.8	6.62	4.8	6.6	4.62	7.81	9.86	7.81	9.86
	(1.101)	(2.087)	(1.131)	(2.145)	(1.036)	(1.477)	(11.524)	(53.601)	(2.062)	(3.698)
Growth (-1)	0.47	0.02	0.47	0.02	0.47	0.02	0.47	0.02	0.47	0.02
	(0.077)	(0.007)	(0.079)	(0.007)	(0.078)	(0.007)	(0.113)	(0.006)	(0.119)	(0.008)
Int. rate (-1)	0.02	0.97	0.02	0.97	0	0.97	0.11	0.99	0.11	0.99
	(0.211)	(0.019)	(0.216)	(0.02)	(0.211)	(0.018)	(0.153)	(0.044)	(0.264)	(0.009)
Innov. covar.										
Growth	41.05		40.74		40.4		40.81		40.81	
			(5.154)		(5.096)		(8.39)		(8.516)	
Int. rate	0.44	0.34	0.44	0.34	0.43	0.33	0.46	0.34	0.46	0.34
			(0.333)	(0.042)	(0.329)	(0.042)	(0.233)	(0.087)	(0.215)	(0.086)
Log likelihood	550.4		550.4		555.2		551.1		557.2	

Table 13: 1-lag test VAR for CAN. In restricted MLEs, mean difference is 2.05

	OLS		MLE		UMLE		Rest MLE		Rest UMLE	
	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate
Coefficients										
Constant	3.17	0.06	3.17	0.06	3.42	0.06	3.04	0	3.04	0
	(1.323)	(0.119)	(1.377)	(0.123)	(1.341)	(0.114)	(1.315)	(0.193)	(1.304)	(0.098)
LR Mean	6.44	4.96	6.44	4.96	6.55	4.71	7.31	8.41	7.31	8.41
	(1.133)	(1.703)	(1.179)	(1.772)	(1.076)	(1.364)	(4.07)	(16.558)	(1.341)	(3.735)
Growth (-1)	0.5	0.02	0.5	0.02	0.51	0.02	0.5	0.02	0.5	0.02
	(0.087)	(0.008)	(0.09)	(0.008)	(0.091)	(0.008)	(0.138)	(0.006)	(0.139)	(0.006)
Int. rate (-1)	-0.75	1.18	-0.75	1.18	-0.8	1.18	-0.72	1.19	-0.72	1.19
	(0.957)	(0.086)	(0.996)	(0.089)	(1.008)	(0.089)	(0.658)	(0.207)	(0.64)	(0.205)
Growth (-2)	-0.05	0	-0.05	0	-0.05	0	-0.05	0	-0.05	0
	(0.088)	(0.008)	(0.091)	(0.008)	(0.092)	(0.008)	(0.109)	(0.006)	(0.111)	(0.006)
Int. rate (-2)	0.81	-0.22	0.81	-0.22	0.83	-0.21	0.83	-0.21	0.83	-0.21
	(0.954)	(0.086)	(0.992)	(0.089)	(1.004)	(0.089)	(0.614)	(0.199)	(0.656)	(0.205)
Innov. covar.										
Growth	40.15		39.84		40.27		39.86		39.86	
			(5.122)		(5.182)		(8.532)		(8.257)	
Int. rate	0.55	0.32	0.54	0.32	0.53	0.32	0.55	0.32	0.55	0.32
			(0.329)	(0.041)	(0.331)	(0.041)	(0.238)	(0.075)	(0.232)	(0.075)
Log likelihood	541.1		541.1		547.4		542.1		549.3	

Table 14: 2-lag test VAR for CAN. In restricted MLEs, mean difference is 1.1 Using AIC opimal lag length 2

	OLS		MLE		UMLE		Rest MLE		Rest UMLE	
	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate
Coefficients										
Constant	3.58	0	3.58	0	3.48	0.01	3.23	-0.07	3.23	-0.07
	(1.384)	(0.123)	(1.479)	(0.131)	(1.436)	(0.121)	(1.398)	(0.182)	(1.428)	(0.11)
LR Mean	6.64	5.11	6.64	5.11	6.38	4.7	7.98	9.08	7.98	9.08
	(1.056)	(1.688)	(1.128)	(1.804)	(1.052)	(1.433)	(6.446)	(21.64)	(1.524)	(3.964)
Growth (-1)	0.51	0.02	0.51	0.02	0.5	0.02	0.51	0.02	0.51	0.02
	(0.088)	(0.008)	(0.094)	(0.008)	(0.094)	(0.008)	(0.146)	(0.006)	(0.147)	(0.006)
Int. rate (-1)	-0.6	1.21	-0.6	1.21	-0.62	1.21	-0.55	1.22	-0.55	1.22
	(1.006)	(0.089)	(1.074)	(0.095)	(1.073)	(0.095)	(0.717)	(0.216)	(0.712)	(0.207)
Growth (-2)	-0.05	0	-0.05	0	-0.05	0	-0.05	0	-0.05	0
	(0.099)	(0.009)	(0.106)	(0.009)	(0.106)	(0.009)	(0.119)	(0.006)	(0.119)	(0.006)
Int. rate (-2)	0.56	-0.42	0.56	-0.42	0.57	-0.42	0.55	-0.42	0.55	-0.42
	(1.587)	(0.14)	(1.695)	(0.15)	(1.692)	(0.15)	(1.089)	(0.341)	(1.097)	(0.339)
Growth (-3)	0.06	0.01	0.06	0.01	0.06	0.01	0.06	0.01	0.06	0.01
	(0.097)	(0.009)	(0.104)	(0.009)	(0.104)	(0.009)	(0.113)	(0.006)	(0.114)	(0.006)
Int. rate (-3)	0.7	0.24	0.7	0.24	0.69	0.24	0.69	0.24	0.69	0.24
	(1.586)	(0.14)	(1.695)	(0.15)	(1.69)	(0.15)	(1.092)	(0.244)	(1.101)	(0.243)
Growth (-4)	-0.1	0	-0.1	0	-0.1	0	-0.11	0	-0.11	0
	(0.088)	(0.008)	(0.095)	(0.008)	(0.094)	(0.008)	(0.121)	(0.006)	(0.123)	(0.007)
Int. rate (-4)	-0.6	-0.07	-0.6	-0.07	-0.58	-0.07	-0.54	-0.06	-0.54	-0.06
	(0.998)	(0.088)	(1.066)	(0.094)	(1.063)	(0.094)	(0.624)	(0.143)	(0.636)	(0.146)
Innov. covar.										
Growth	39.62		39.32		39.28		39.41		39.41	
			(5.231)		(5.165)		(8.471)		(8.47)	
Int. rate	0.54	0.31	0.53	0.31	0.53	0.31	0.55	0.31	0.55	0.31
			(0.331)	(0.041)	(0.329)	(0.041)	(0.249)	(0.079)	(0.237)	(0.079)
Log likelihood	529.5		529.5		534.9		530.4		537	

Table 15: 4-lag test VAR for CAN. In restricted MLEs, mean difference is 1.1

	OLS		MLE		UMLE		Rest MLE		Rest UMLE	
	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate
Coefficients										
Constant	0.5	0.44	0.5	0.44	0.6	0.49	-1.81	0.15	-1.81	0.15
	(2.029)	(0.235)	(2.087)	(0.241)	(2.091)	(0.229)	(1.331)	(0.25)	(1.425)	(0.101)
LR Mean	7.67	5	7.67	5	7.76	5.21	1.68	2.63	1.68	2.63
	(2.193)	(0.994)	(2.255)	(1.022)	(1.994)	(0.858)	(6.486)	(2.869)	(2.806)	(0.879)
Growth (-1)	0.47	0.01	0.47	0.01	0.48	0.01	0.49	0.01	0.49	0.01
	(0.078)	(0.009)	(0.08)	(0.009)	(0.081)	(0.009)	(0.119)	(0.01)	(0.119)	(0.01)
Int. rate (-1)	0.71	0.9	0.71	0.9	0.66	0.89	1.01	0.94	1.01	0.94
	(0.365)	(0.042)	(0.376)	(0.043)	(0.377)	(0.042)	(0.291)	(0.056)	(0.309)	(0.036)
Innov. covar.										
Growth	67.62		67.09		67.55		67.84		67.84	
			(8.626)		(8.762)		(11.876)		(11.551)	
Int. rate	0.97	0.91	0.96	0.9	0.92	0.89	1.06	0.91	1.06	0.91
			(0.711)	(0.115)	(0.712)	(0.115)	(0.619)	(0.378)	(0.639)	(0.39)
Log likelihood	629.5		629.5		635.6		630.8		637.8	

Table 16: 1-lag test VAR for JPN. In restricted MLEs, mean difference is 0.95

	OLS		MLE		UMLE		Rest MLE		Rest UMLE	
	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate
Coefficients										
Constant	0.5	0.44	0.5	0.44	0.6	0.49	-1.81	0.15	-1.81	0.15
	(2.029)	(0.235)	(2.087)	(0.241)	(2.091)	(0.229)	(1.331)	(0.25)	(1.425)	(0.101)
LR Mean	7.67	5	7.67	5	7.76	5.21	1.68	2.63	1.68	2.63
	(2.193)	(0.994)	(2.255)	(1.022)	(1.994)	(0.858)	(6.486)	(2.869)	(2.806)	(0.879)
Growth (-1)	0.47	0.01	0.47	0.01	0.48	0.01	0.49	0.01	0.49	0.01
	(0.078)	(0.009)	(0.08)	(0.009)	(0.081)	(0.009)	(0.119)	(0.01)	(0.119)	(0.01)
Int. rate (-1)	0.71	0.9	0.71	0.9	0.66	0.89	1.01	0.94	1.01	0.94
	(0.365)	(0.042)	(0.376)	(0.043)	(0.377)	(0.042)	(0.291)	(0.056)	(0.309)	(0.036)
Innov. covar.										
Growth	67.62		67.09		67.55		67.84		67.84	
			(8.626)		(8.762)		(11.876)		(11.551)	
Int. rate	0.97	0.91	0.96	0.9	0.92	0.89	1.06	0.91	1.06	0.91
			(0.711)	(0.115)	(0.712)	(0.115)	(0.619)	(0.378)	(0.639)	(0.39)
Log likelihood	629.5		629.5		635.6		630.8		637.8	

Table 17: 1-lag test VAR for JPN. In restricted MLEs, mean difference is 0.95 Using AIC opimal lag length 1

	OLS		MLE		UMLE		Rest MLE		Rest UMLE	
	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate
Coefficients										
Constant	-0.32	0.28	-0.32	0.28	-0.17	0.36	-1.6	0.07	-1.6	0.07
	(2.247)	(0.257)	(2.406)	(0.276)	(2.412)	(0.244)	(1.454)	(0.215)	(7.304)	(0.088)
LR Mean	6.91	4.55	6.91	4.55	7.39	4.98	-2.37	0.63	-2.37	0.63
	(3.986)	(1.711)	(4.268)	(1.833)	(3.011)	(1.187)	(25.367)	(11.204)	(15.527)	(1.385)
Growth (-1)	0.44	0.01	0.44	0.01	0.44	0.01	0.44	0.01	0.44	0.01
	(0.09)	(0.01)	(0.096)	(0.011)	(0.097)	(0.011)	(0.133)	(0.011)	(0.14)	(0.018)
Int. rate (-1)	0.12	1	0.12	1	0.05	1	0.18	1.01	0.18	1.01
	(0.772)	(0.088)	(0.827)	(0.095)	(0.833)	(0.094)	(0.553)	(0.099)	(0.687)	(0.103)
Growth (-2)	0	-0.01	0	-0.01	0	-0.01	0	-0.01	0	-0.01
	(0.097)	(0.011)	(0.104)	(0.012)	(0.105)	(0.012)	(0.129)	(0.011)	(0.134)	(0.015)
Int. rate (-2)	0.73	-0.19	0.73	-0.19	0.75	-0.2	0.75	-0.19	0.75	-0.19
	(1.1)	(0.126)	(1.178)	(0.135)	(1.187)	(0.135)	(1.148)	(0.14)	(1.134)	(0.141)
Growth (-3)	0.08	0.01	0.08	0.01	0.08	0.01	0.08	0.01	0.08	0.01
	(0.096)	(0.011)	(0.103)	(0.012)	(0.104)	(0.012)	(0.124)	(0.008)	(0.125)	(0.012)
Int. rate (-3)	-0.7	-0.09	-0.7	-0.09	-0.71	-0.09	-0.7	-0.09	-0.7	-0.09
	(1.099)	(0.126)	(1.177)	(0.135)	(1.187)	(0.135)	(1.062)	(0.172)	(1.066)	(0.174)
Growth (-4)	0.04	0.01	0.04	0.01	0.04	0.01	0.05	0.01	0.05	0.01
	(0.088)	(0.01)	(0.094)	(0.011)	(0.095)	(0.011)	(0.098)	(0.008)	(0.1)	(0.013)
Int. rate (-4)	0.58	0.2	0.58	0.2	0.58	0.19	0.7	0.22	0.7	0.22
	(0.781)	(0.089)	(0.836)	(0.096)	(0.844)	(0.095)	(0.406)	(0.165)	(0.798)	(0.17)
Innov. covar.										
Growth	65.27		64.76		65.39		64.93		64.93	
			(8.772)		(8.573)		(11.891)		(13.488)	
Int. rate	0.93	0.86	0.93	0.85	0.87	0.85	0.96	0.85	0.96	0.85
			(0.716)	(0.115)	(0.717)	(0.114)	(0.63)	(0.341)	(0.658)	(0.351)
Log likelihood	609		609		615.5		609.5		617.2	

Table 18: 4-lag test VAR for JPN. In restricted MLEs, mean difference is 3

	OLS		MLE		UMLE		Rest MLE		Rest UMLE	
	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate
Coefficients										
Constant	1.06	0.28	1.06	0.28	1.17	0.31	-0.85	0.05	-0.85	0.05
	(1.404)	(0.196)	(1.445)	(0.201)	(1.392)	(0.187)	(1.228)	(0.275)	(2.122)	(0.12)
LR Mean	7.16	6.72	7.16	6.72	7.02	6.6	-3.52	-1.22	-3.52	-1.22
	(2.491)	(1.94)	(2.563)	(1.997)	(2.116)	(1.562)	(49.629)	(38.997)	(5.535)	(2.335)
Growth (-1)	0.57	0.03	0.57	0.03	0.57	0.03	0.58	0.03	0.58	0.03
	(0.077)	(0.011)	(0.08)	(0.011)	(0.078)	(0.011)	(0.111)	(0.015)	(0.129)	(0.021)
Int. rate (-1)	0.3	0.92	0.3	0.92	0.28	0.92	0.52	0.95	0.52	0.95
	(0.2)	(0.028)	(0.205)	(0.029)	(0.201)	(0.027)	(0.191)	(0.046)	(0.362)	(0.018)
Innov. covar.										
Growth	45.68		45.32		44.86		45.99		45.99	
			(5.9)		(5.825)		(9.885)		(9.869)	
Int. rate	1.5	0.89	1.49	0.88	1.47	0.88	1.57	0.89	1.57	0.89
			(0.598)	(0.115)	(0.59)	(0.114)	(0.56)	(0.187)	(0.569)	(0.185)
Log likelihood	586.3		586.3		591.4		587.6		594	

Table 19: 1-lag test VAR for ITA. In restricted MLEs, mean difference is 2.3

	OLS		MLE		UMLE		Rest MLE		Rest UMLE	
	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate
Coefficients										
Constant	1.27	0.34	1.27	0.34	1.27	0.36	-0.58	0.27	-0.58	0.27
	(1.361)	(0.194)	(1.439)	(0.205)	(1.374)	(0.196)	(1.094)	(0.242)	(0.921)	(0.182)
LR Mean	7.35	6.84	7.35	6.84	6.9	6.61	0.27	3.47	0.27	3.47
	(2.91)	(1.686)	(3.077)	(1.783)	(2.688)	(1.49)	(9.671)	(5.092)	(3.951)	(1.807)
Growth (-1)	0.53	0.02	0.53	0.02	0.53	0.02	0.56	0.02	0.56	0.02
	(0.087)	(0.012)	(0.092)	(0.013)	(0.091)	(0.013)	(0.123)	(0.015)	(0.12)	(0.015)
Int. rate (-1)	0.16	1.22	0.16	1.22	0.16	1.21	0.19	1.22	0.19	1.22
	(0.651)	(0.093)	(0.688)	(0.098)	(0.683)	(0.098)	(0.708)	(0.129)	(0.708)	(0.127)
Growth (-2)	-0.11	0.01	-0.11	0.01	-0.11	0.01	-0.1	0.01	-0.1	0.01
	(0.098)	(0.014)	(0.104)	(0.015)	(0.103)	(0.015)	(0.15)	(0.011)	(0.15)	(0.011)
Int. rate (-2)	-0.7	-0.4	-0.7	-0.4	-0.7	-0.4	-0.76	-0.41	-0.76	-0.41
	(0.993)	(0.142)	(1.05)	(0.15)	(1.043)	(0.149)	(1.109)	(0.191)	(1.106)	(0.19)
Growth (-3)	0.35	0.01	0.35	0.01	0.35	0.01	0.37	0.01	0.37	0.01
	(0.088)	(0.012)	(0.093)	(0.013)	(0.092)	(0.013)	(0.102)	(0.01)	(0.099)	(0.01)
Int. rate (-3)	0.59	0.1	0.59	0.1	0.59	0.1	0.75	0.11	0.75	0.11
	(0.627)	(0.089)	(0.663)	(0.095)	(0.657)	(0.094)	(0.586)	(0.113)	(0.583)	(0.11)
Innov. covar.										
Growth	40.14		39.82		39.46		40.58		40.58	
			(5.369)		(5.304)		(9.608)		(9.634)	
Int. rate	1.35	0.82	1.34	0.81	1.32	0.81	1.37	0.81	1.37	0.81
			(0.556)	(0.109)	(0.55)	(0.108)	(0.585)	(0.188)	(0.588)	(0.189)
Log likelihood	563.7		563.7		569		564.9		570.5	

Table 20: 3-lag test VAR for ITA. In restricted MLEs, mean difference is 3.2 Using AIC opimal lag length 3

	OLS		MLE		UMLE		Rest MLE		Rest UMLE	
	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate
Coefficients										
Constant	1.47	0.31	1.47	0.31	1.32	0.34	-0.69	0.18	-0.69	0.18
	(1.38)	(0.198)	(1.48)	(0.212)	(1.445)	(0.201)	(1.129)	(0.267)	(1.458)	(0.187)
LR Mean	7.77	7.01	7.77	7.01	6.87	6.61	-1.51	1.69	-1.51	1.69
	(2.744)	(1.724)	(2.944)	(1.85)	(2.712)	(1.573)	(21.198)	(13.27)	(5.366)	(2.124)
Growth (-1)	0.54	0.02	0.54	0.02	0.54	0.02	0.56	0.02	0.56	0.02
	(0.092)	(0.013)	(0.099)	(0.014)	(0.099)	(0.014)	(0.138)	(0.015)	(0.138)	(0.017)
Int. rate (-1)	0.21	1.21	0.21	1.21	0.19	1.21	0.28	1.22	0.28	1.22
	(0.649)	(0.093)	(0.696)	(0.1)	(0.697)	(0.099)	(0.727)	(0.131)	(0.755)	(0.126)
Growth (-2)	-0.12	0.01	-0.12	0.01	-0.12	0.01	-0.11	0.01	-0.11	0.01
	(0.099)	(0.014)	(0.106)	(0.015)	(0.106)	(0.015)	(0.153)	(0.012)	(0.154)	(0.013)
Int. rate (-2)	-0.84	-0.37	-0.84	-0.37	-0.83	-0.37	-0.84	-0.37	-0.84	-0.37
	(1.018)	(0.146)	(1.092)	(0.157)	(1.094)	(0.156)	(1.198)	(0.191)	(1.195)	(0.191)
Growth (-3)	0.36	0.01	0.36	0.01	0.36	0.01	0.37	0.01	0.37	0.01
	(0.098)	(0.014)	(0.105)	(0.015)	(0.106)	(0.015)	(0.116)	(0.011)	(0.116)	(0.012)
Int. rate (-3)	0.86	-0.03	0.86	-0.03	0.85	-0.03	0.8	-0.03	0.8	-0.03
	(1.021)	(0.146)	(1.095)	(0.157)	(1.098)	(0.157)	(1.062)	(0.174)	(1.056)	(0.174)
Growth (-4)	-0.01	0	-0.01	0	-0.01	0	0	0	0	0
	(0.093)	(0.013)	(0.099)	(0.014)	(0.1)	(0.014)	(0.109)	(0.01)	(0.109)	(0.01)
Int. rate (-4)	-0.18	0.1	-0.18	0.1	-0.17	0.1	0	0.11	0	0.11
	(0.633)	(0.091)	(0.679)	(0.097)	(0.681)	(0.097)	(0.535)	(0.124)	(0.525)	(0.123)
Innov. covar.										
Growth	39.61		39.29		39.39		40.16		40.16	
			(5.396)		(5.366)		(9.696)		(9.763)	
Int. rate	1.35	0.81	1.34	0.81	1.33	0.8	1.4	0.81	1.4	0.81
			(0.562)	(0.111)	(0.56)	(0.11)	(0.593)	(0.189)	(0.594)	(0.191)
Log likelihood	558.1		558.1		564		559.5		565.9	

Table 21: 4-lag test VAR for ITA. In restricted MLEs, mean difference is 3.2

	USA		France		United Kingdom		Germany		Japan		Italy		Canada	
	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate
Coefficients														
Constant	3.26	0.12	0.44	0.1	-0.19	0.23	1.74	0.36	0.6	0.49	1.17	0.31	3.55	0.02
	(1.359)	(0.112)	(0.778)	(0.095)	(1.39)	(0.157)	(1.703)	(0.211)	(2.091)	(0.229)	(1.392)	(0.187)	(1.28)	(0.108)
LR Mean	5.93	4.18	5.03	4.5	4.96	4.89	6.08	5.04	7.76	5.21	7.02	6.6	6.6	4.62
	(1.06)	(1.224)	(2.13)	(1.78)	(2.268)	(1.602)	(1.538)	(0.824)	(1.994)	(0.858)	(2.116)	(1.562)	(1.036)	(1.477)
Growth (-1)	0.41	0.01	0.58	0.03	0.38	0.02	0.63	0.01	0.48	0.01	0.57	0.03	0.47	0.02
	(0.081)	(0.007)	(0.073)	(0.01)	(0.092)	(0.011)	(0.072)	(0.009)	(0.081)	(0.009)	(0.078)	(0.011)	(0.078)	(0.007)
Int. rate (-1)	0.05	0.96	0.37	0.95	0.67	0.94	0.11	0.91	0.66	0.89	0.28	0.92	0	0.97
	(0.257)	(0.022)	(0.152)	(0.019)	(0.249)	(0.029)	(0.297)	(0.037)	(0.377)	(0.042)	(0.201)	(0.027)	(0.211)	(0.018)
Innov. covar.														
Growth	45.55		20.85		42.38		34.39		67.55		44.86		40.4	
	(5.735)		(2.622)		(5.776)		(4.503)		(8.762)		(5.825)		(5.096)	
Int. rate	0.67	0.37	0.21	0.38	0.93	0.67	0.03	0.59	0.92	0.89	1.47	0.88	0.43	0.33
	(0.371)	(0.047)	(0.25)	(0.048)	(0.526)	(0.092)	(0.415)	(0.077)	(0.712)	(0.115)	(0.59)	(0.114)	(0.329)	(0.042)
Log likelihood	569.4		519.8		513.7		543.6		635.6		591.4		555.2	

Table 22: 1-lag VAR for sample of countries. Annual data 1880-2013. Robust likelihood-based standard errors in parentheses.

	USA		France		United Kingdom		Germany		Japan		Italy		Canada	
	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate
Coefficients														
Constant	3.57	0.13	0.47	0.09	0.02	0.26	1.78	0.28	-0.17	0.36	1.32	0.34	3.48	0.01
	(1.516)	(0.124)	(0.826)	(0.094)	(1.548)	(0.179)	(1.845)	(0.239)	(2.412)	(0.244)	(1.445)	(0.201)	(1.436)	(0.121)
LR Mean	5.83	4.33	5.04	4.55	5.19	5.14	6.18	5.01	7.39	4.98	6.87	6.61	6.38	4.7
	(0.956)	(1.102)	(2.121)	(1.895)	(2.126)	(1.536)	(1.611)	(0.946)	(3.011)	(1.187)	(2.712)	(1.573)	(1.052)	(1.433)
Growth (-1)	0.41	0.01	0.56	0.03	0.37	0.01	0.75	0.01	0.44	0.01	0.54	0.02	0.5	0.02
	(0.094)	(0.008)	(0.093)	(0.012)	(0.104)	(0.013)	(0.095)	(0.013)	(0.097)	(0.011)	(0.099)	(0.014)	(0.094)	(0.008)
Int. rate (-1)	0.06	1.15	0.96	1.23	1.88	1.09	0.52	0.98	0.05	1	0.19	1.21	-0.62	1.21
	(1.059)	(0.091)	(0.715)	(0.092)	(0.836)	(0.104)	(0.713)	(0.096)	(0.833)	(0.094)	(0.697)	(0.099)	(1.073)	(0.095)
Growth (-2)	0.05	0.01	0.11	-0.01	0.03	0.02	-0.31	-0.01	0	-0.01	-0.12	0.01	-0.05	0
	(0.101)	(0.009)	(0.108)	(0.014)	(0.11)	(0.014)	(0.115)	(0.015)	(0.105)	(0.012)	(0.106)	(0.015)	(0.106)	(0.009)
Int. rate (-2)	-1.04	-0.42	-0.84	-0.38	-1.5	-0.21	-0.88	-0.13	0.75	-0.2	-0.83	-0.37	0.57	-0.42
	(1.596)	(0.138)	(1.157)	(0.149)	(1.232)	(0.154)	(1.014)	(0.136)	(1.187)	(0.135)	(1.094)	(0.156)	(1.692)	(0.15)
Growth (-3)	-0.12	0	-0.12	0.01	0.01	-0.01	0.39	0.01	0.08	0.01	0.36	0.01	0.06	0.01
	(0.101)	(0.009)	(0.108)	(0.014)	(0.111)	(0.014)	(0.115)	(0.015)	(0.104)	(0.012)	(0.106)	(0.015)	(0.104)	(0.009)
Int. rate (-3)	2.29	0.5	1.1	-0.1	0.78	0.02	0.83	-0.09	-0.71	-0.09	0.85	-0.03	0.69	0.24
	(1.599)	(0.139)	(1.157)	(0.149)	(1.231)	(0.154)	(1.012)	(0.136)	(1.187)	(0.135)	(1.098)	(0.157)	(1.69)	(0.15)
Growth (-4)	-0.08	0	-0.12	0.01	-0.05	0	-0.2	0.02	0.04	0.01	-0.01	0	-0.1	0
	(0.093)	(0.008)	(0.095)	(0.012)	(0.105)	(0.013)	(0.097)	(0.013)	(0.095)	(0.011)	(0.1)	(0.014)	(0.094)	(0.008)
Int. rate (-4)	-1.14	-0.28	-0.7	0.19	-0.52	0.03	-0.36	0.15	0.58	0.19	-0.17	0.1	-0.58	-0.07
	(1.065)	(0.092)	(0.703)	(0.091)	(0.824)	(0.103)	(0.714)	(0.096)	(0.844)	(0.095)	(0.681)	(0.097)	(1.063)	(0.094)
Innov. covar.														
Growth	44.14		19.92		41.52		30.87		65.39		39.39		39.28	
	(5.923)		(2.639)		(5.985)		(4.244)		(8.573)		(5.366)		(5.165)	
Int. rate	0.58	0.33	0.24	0.33	0.8	0.65	-0.03	0.56	0.87	0.85	1.33	0.8	0.53	0.31
	(0.362)	(0.044)	(0.242)	(0.044)	(0.541)	(0.095)	(0.404)	(0.077)	(0.717)	(0.114)	(0.56)	(0.11)	(0.329)	(0.041)
Log likelihood	547.5		496.7		497.7		521		615.5		564		534.9	

Table 23: Multi-lag VAR for sample of countries. Annual data 1880-2013. Robust likelihood-based standard errors in parentheses.

	USA		France		United Kingdom		Germany		Japan		Italy		Canada	
	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate	Growth	Int. rate
Coefficients														
Constant	3.57	0.05	0.21	-0.01	-0.93	0.01	-0.29	0.01	-1.6	0.07	-0.69	0.18	3.23	-0.07
	(1.568)	(0.101)	(NaN)	(NaN)	(1.653)	(0.039)	(0.925)	(0.088)	(7.304)	(0.088)	(1.458)	(0.187)	(1.428)	(0.11)
LR Mean	6.71	7.38	-210.03	-202.03	-7.71	-4.99	-5.63	-3.73	-2.37	0.63	-1.51	1.69	7.98	9.08
	(0.963)	(3.404)	(NaN)	(NaN)	(5.788)	(3.435)	(4.274)	(2.105)	(15.527)	(1.385)	(5.366)	(2.124)	(1.524)	(3.964)
Growth (-1)	0.41	0.01	0.57	0.03	0.37	0.01	0.77	0.01	0.44	0.01	0.56	0.02	0.51	0.02
	(0.128)	(0.004)	(NaN)	(NaN)	(0.201)	(0.012)	(0.132)	(0.019)	(0.14)	(0.018)	(0.138)	(0.017)	(0.147)	(0.006)
Int. rate (-1)	0.09	1.17	1.01	1.25	1.97	1.11	0.64	0.99	0.18	1.01	0.28	1.22	-0.55	1.22
	(0.663)	(0.19)	(NaN)	(NaN)	(0.906)	(0.175)	(0.817)	(0.12)	(0.687)	(0.103)	(0.755)	(0.126)	(0.712)	(0.207)
Growth (-2)	0.05	0.01	0.1	-0.01	0.03	0.02	-0.31	-0.01	0	-0.01	-0.11	0.01	-0.05	0
	(0.155)	(0.005)	(NaN)	(NaN)	(0.164)	(0.019)	(0.126)	(0.02)	(0.134)	(0.015)	(0.154)	(0.013)	(0.119)	(0.006)
Int. rate (-2)	-1.05	-0.42	-0.85	-0.38	-1.51	-0.21	-0.86	-0.13	0.75	-0.19	-0.84	-0.37	0.55	-0.42
	(0.957)	(0.294)	(NaN)	(NaN)	(1.055)	(0.2)	(1.103)	(0.133)	(1.134)	(0.141)	(1.195)	(0.191)	(1.097)	(0.339)
Growth (-3)	-0.12	0	-0.12	0.01	0.01	-0.01	0.4	0.01	0.08	0.01	0.37	0.01	0.06	0.01
	(0.14)	(0.006)	(NaN)	(NaN)	(0.108)	(0.019)	(0.136)	(0.013)	(0.125)	(0.012)	(0.116)	(0.012)	(0.114)	(0.006)
Int. rate (-3)	2.3	0.5	1.1	-0.1	0.78	0.02	0.85	-0.08	-0.7	-0.09	0.8	-0.03	0.69	0.24
	(0.992)	(0.239)	(NaN)	(NaN)	(0.706)	(0.138)	(0.827)	(0.155)	(1.066)	(0.174)	(1.056)	(0.174)	(1.101)	(0.243)
Growth (-4)	-0.08	0	-0.12	0.01	-0.05	0	-0.2	0.02	0.05	0.01	0	0	-0.11	0
	(0.106)	(0.005)	(NaN)	(NaN)	(0.109)	(0.015)	(0.096)	(0.013)	(0.1)	(0.013)	(0.109)	(0.01)	(0.123)	(0.007)
Int. rate (-4)	-1.15	-0.27	-0.66	0.2	-0.43	0.05	-0.18	0.17	0.7	0.22	0	0.11	-0.54	-0.06
	(0.588)	(0.158)	(NaN)	(NaN)	(0.547)	(0.123)	(0.441)	(0.096)	(0.798)	(0.17)	(0.525)	(0.123)	(0.636)	(0.146)
Innov. covar.														
Growth	44.37		20.18		41.86		31.53		64.93		40.16		39.41	
	(8.425)				(10.794)		(9.724)		(13.488)		(9.763)		(8.47)	
Int. rate	0.59	0.34	0.25	0.34	0.86	0.66	0.02	0.57	0.96	0.85	1.4	0.81	0.55	0.31
	(0.233)	(0.075)			(0.778)	(0.167)	(0.457)	(0.124)	(0.658)	(0.351)	(0.594)	(0.191)	(0.237)	(0.079)
Log likelihood	549.7		NaN		500.3		524.1		617.2		565.9		537	

Table 24: Multi-lag restricted VAR for sample of countries. Lon-run means are restricted to be at the 5% critical value under the unconditional LR test. Annual data 1880-2013. Robust likelihood-based standard errors in parentheses

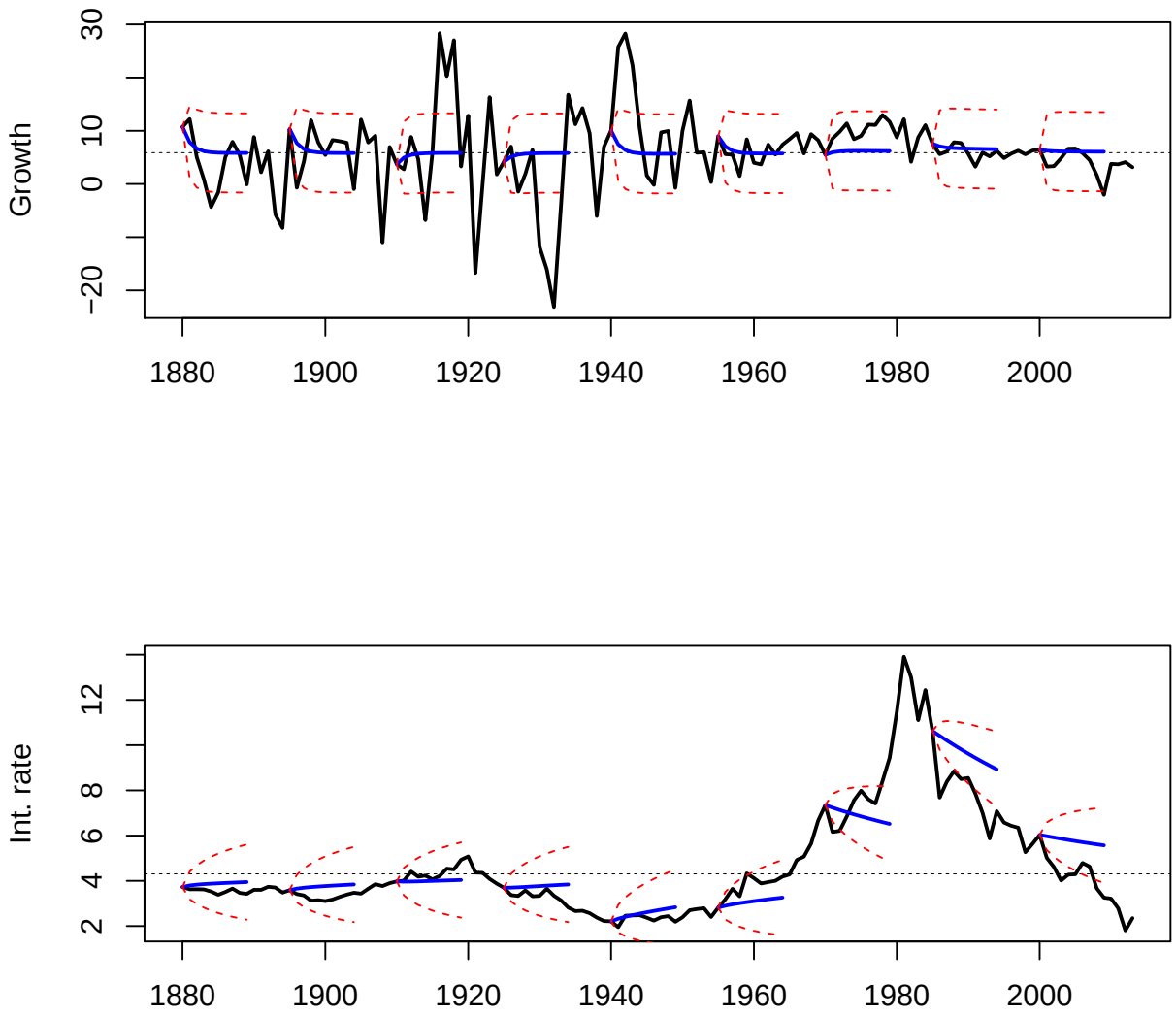

Figure 1: Conditional optimal lag MLE in-sample forecasts for USA

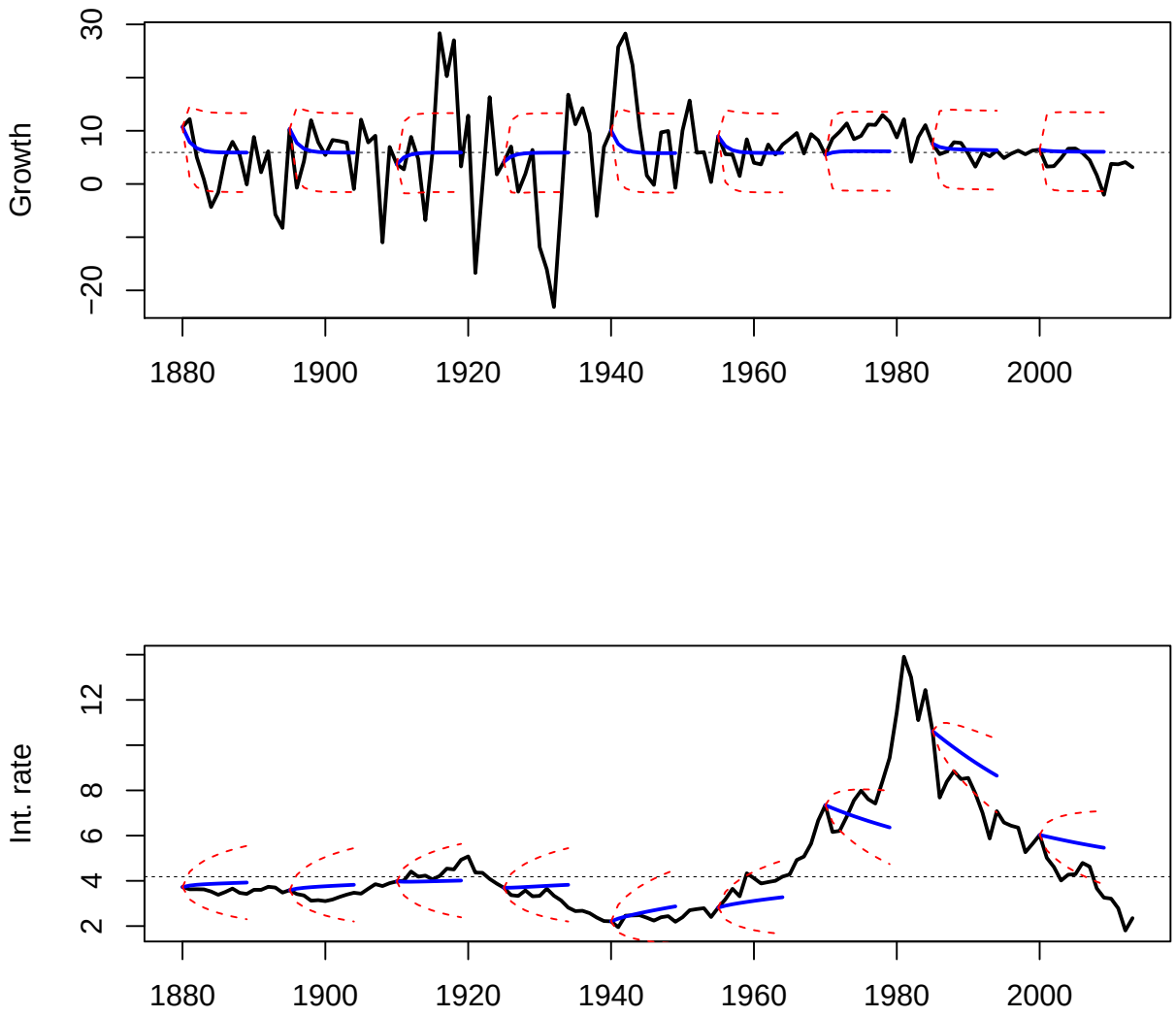

Figure 2: Unconditional optimal lag MLE in-sample forecasts for USA

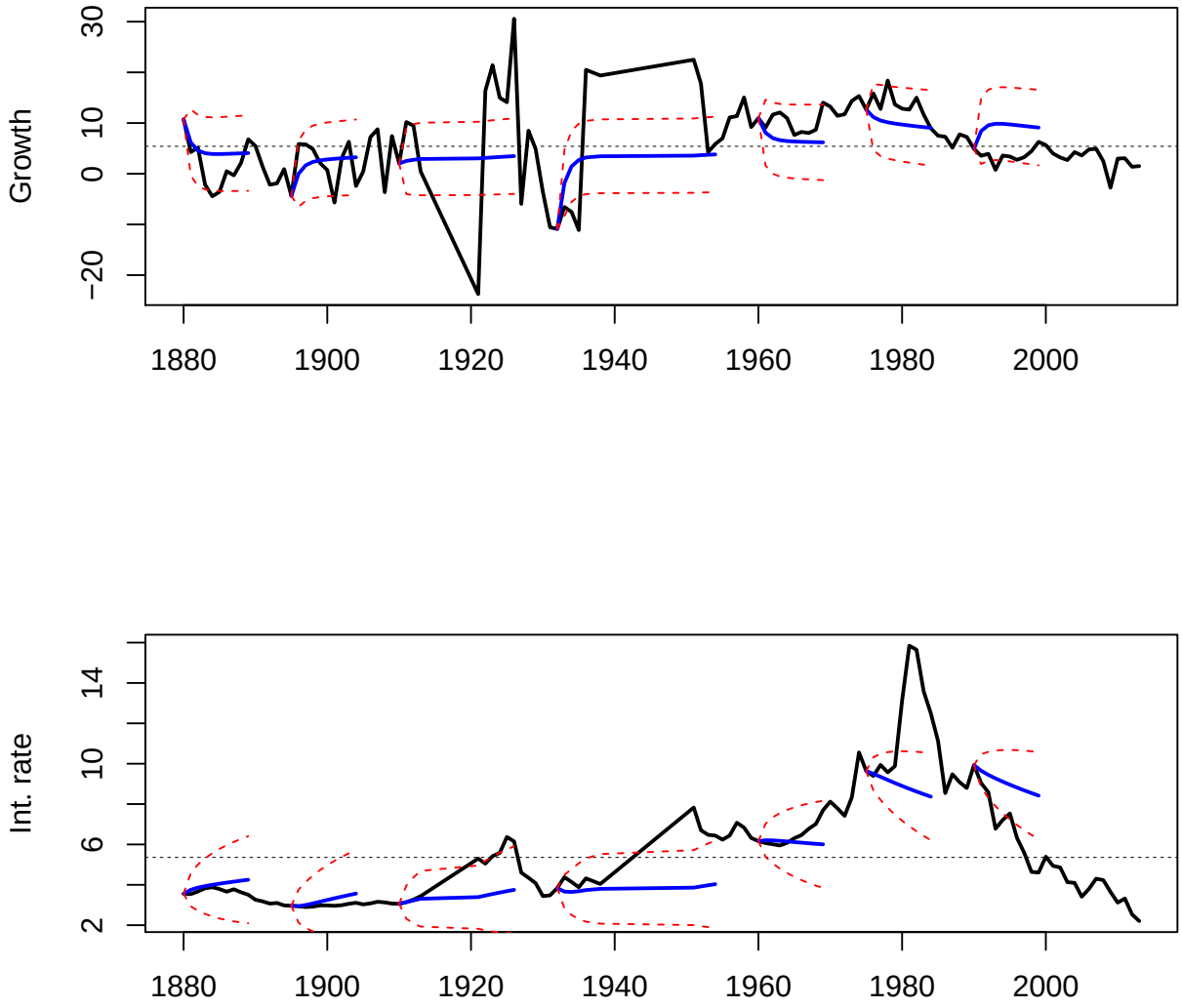

Figure 3: Conditional optimal lag MLE in-sample forecasts for France

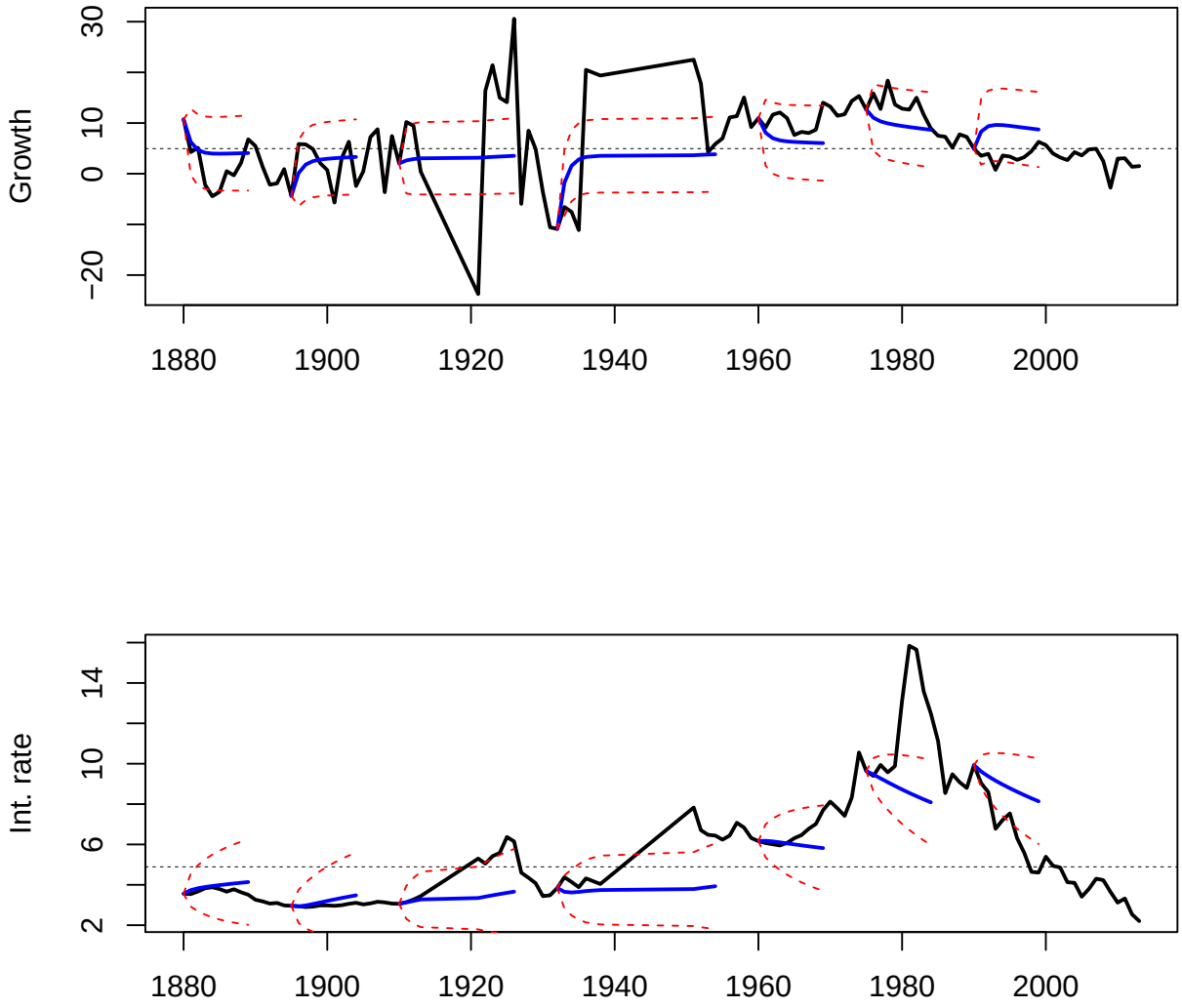

Figure 4: Unconditional optimal lag MLE in-sample forecasts for France

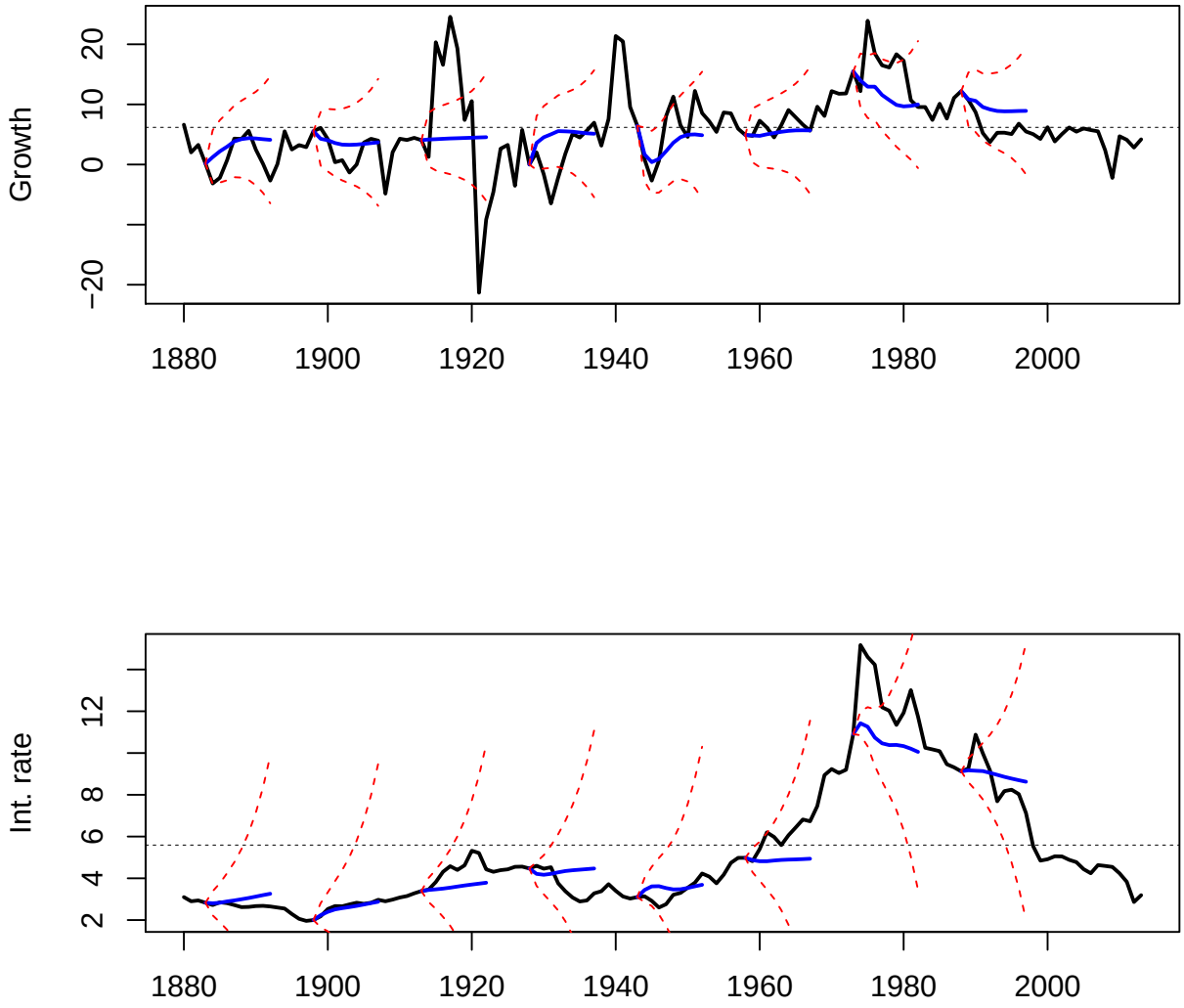

Figure 5: Conditional optimal lag MLE in-sample forecasts for UK

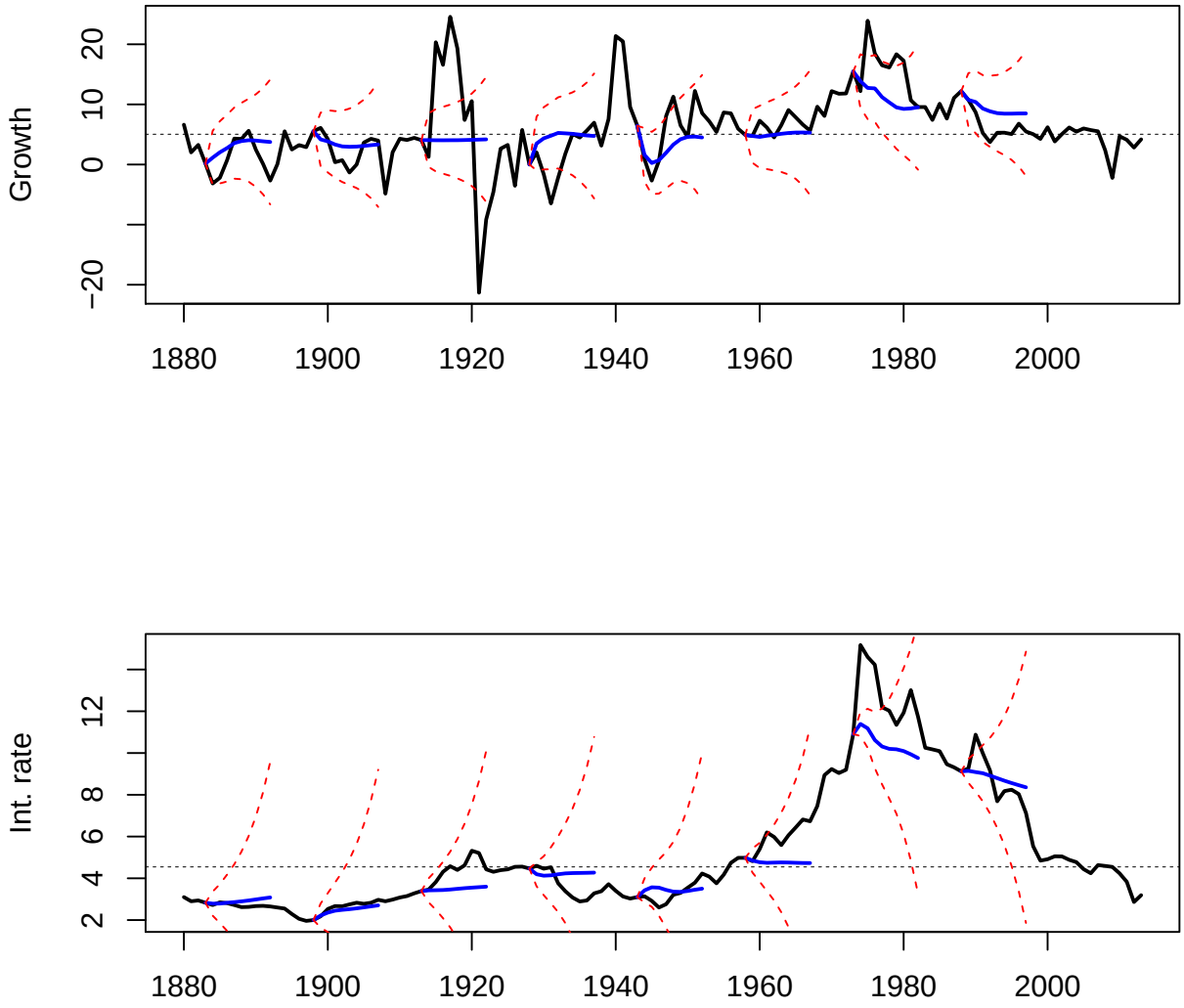

Figure 6: Unconditional optimal lag MLE in-sample forecasts for UK

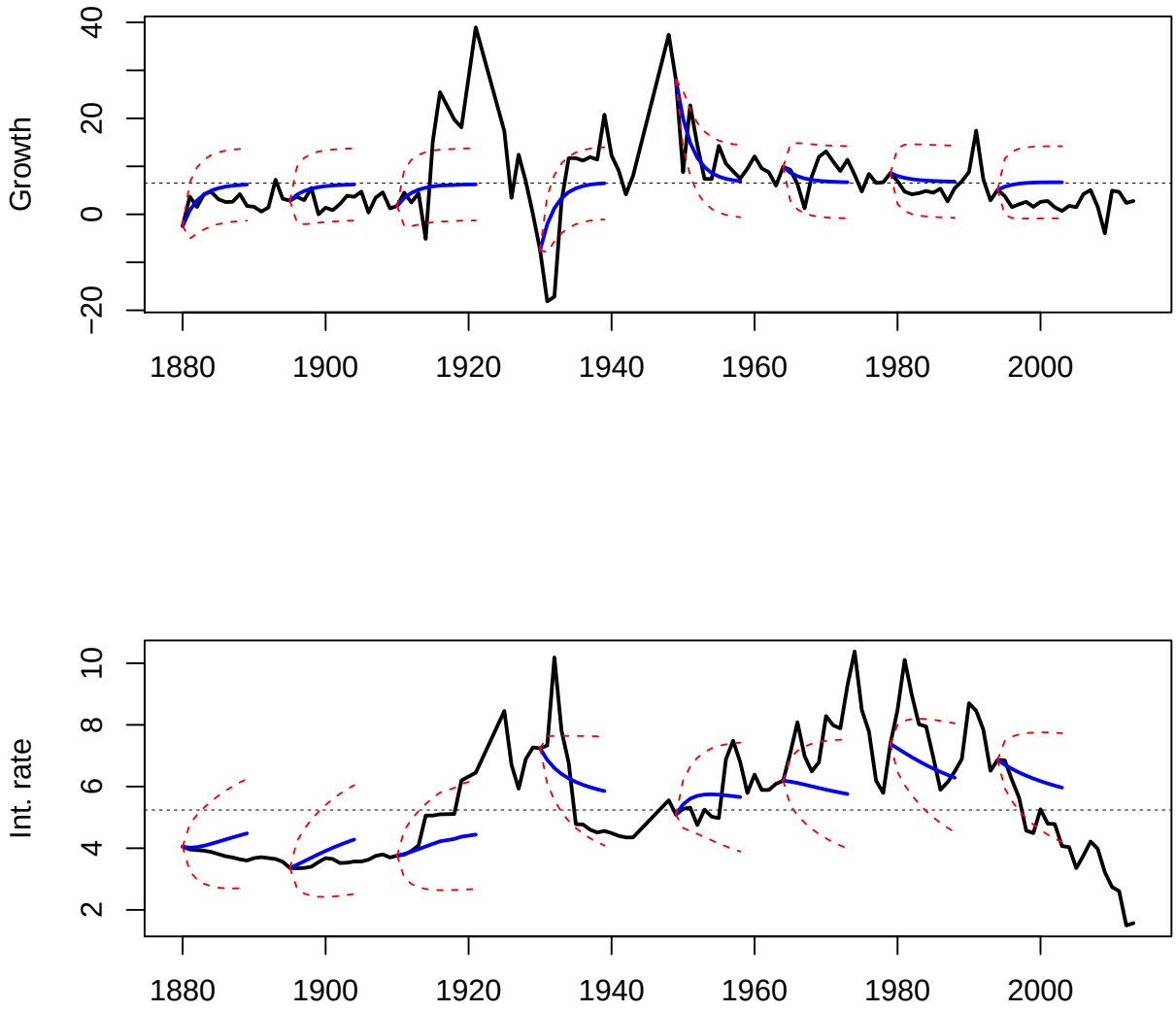

Figure 7: Conditional optimal lag MLE in-sample forecasts for Germany

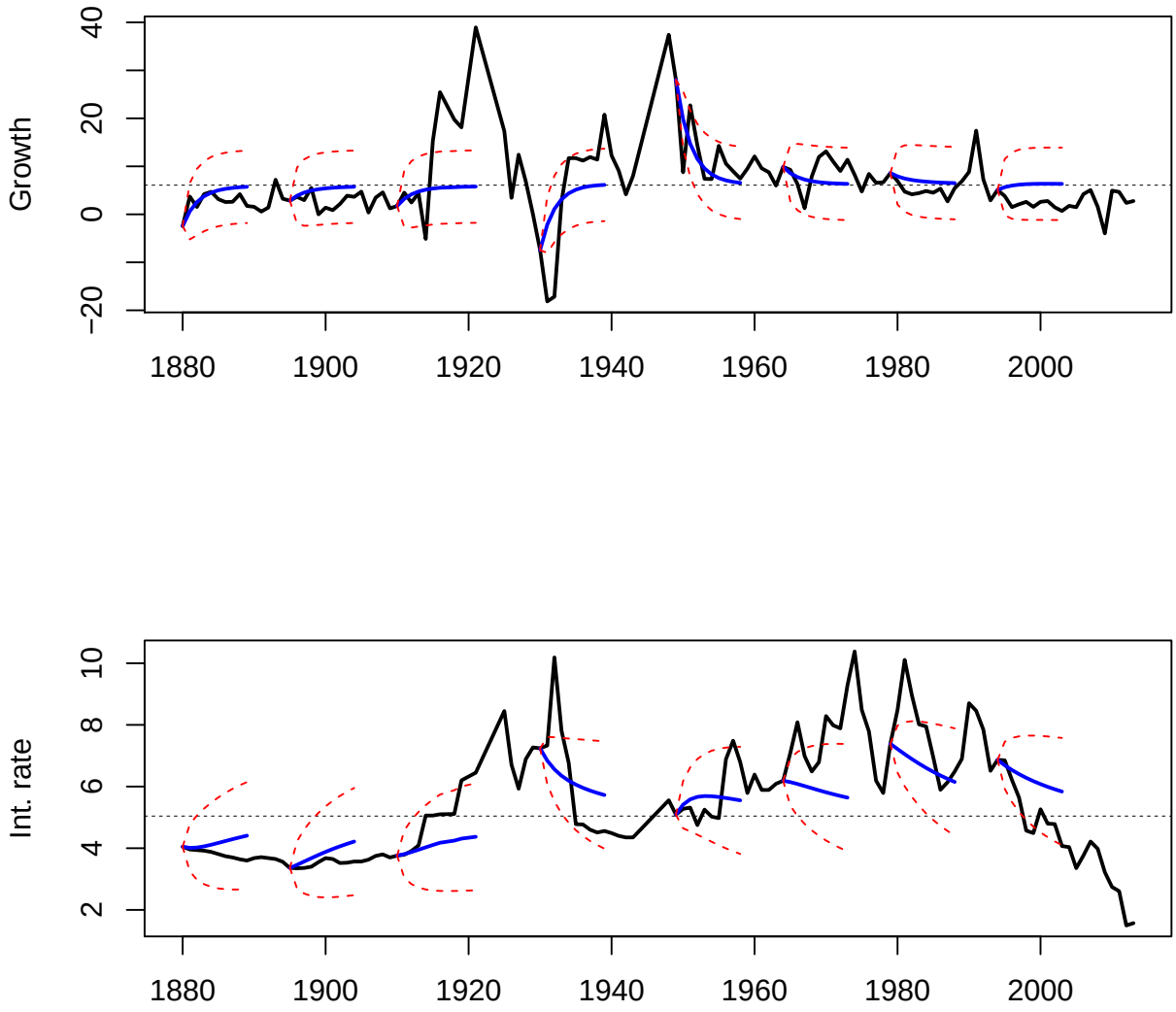

Figure 8: Unconditional optimal lag MLE in-sample forecasts for Germany

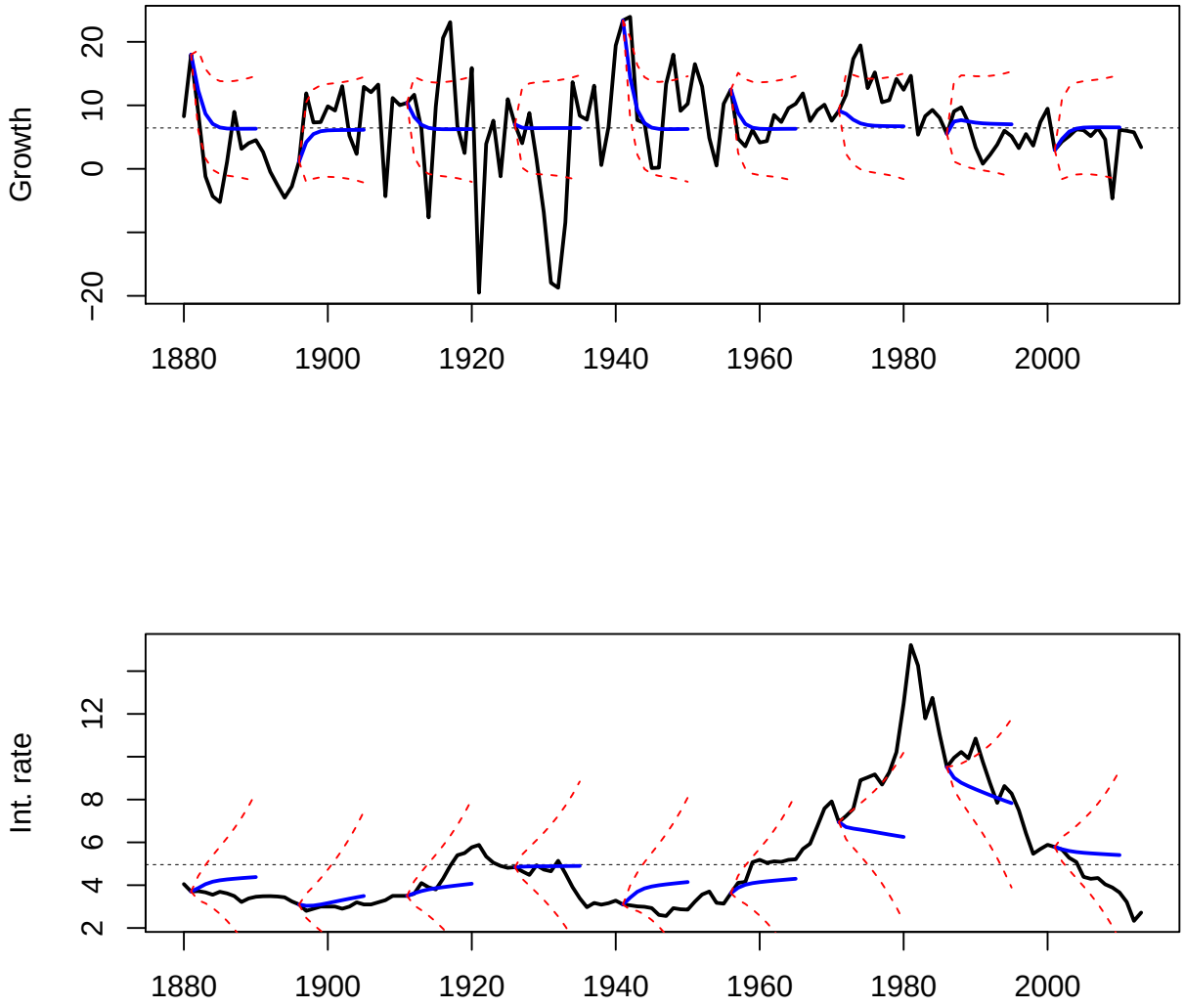

Figure 9: Conditional optimal lag MLE in-sample forecasts for Canada

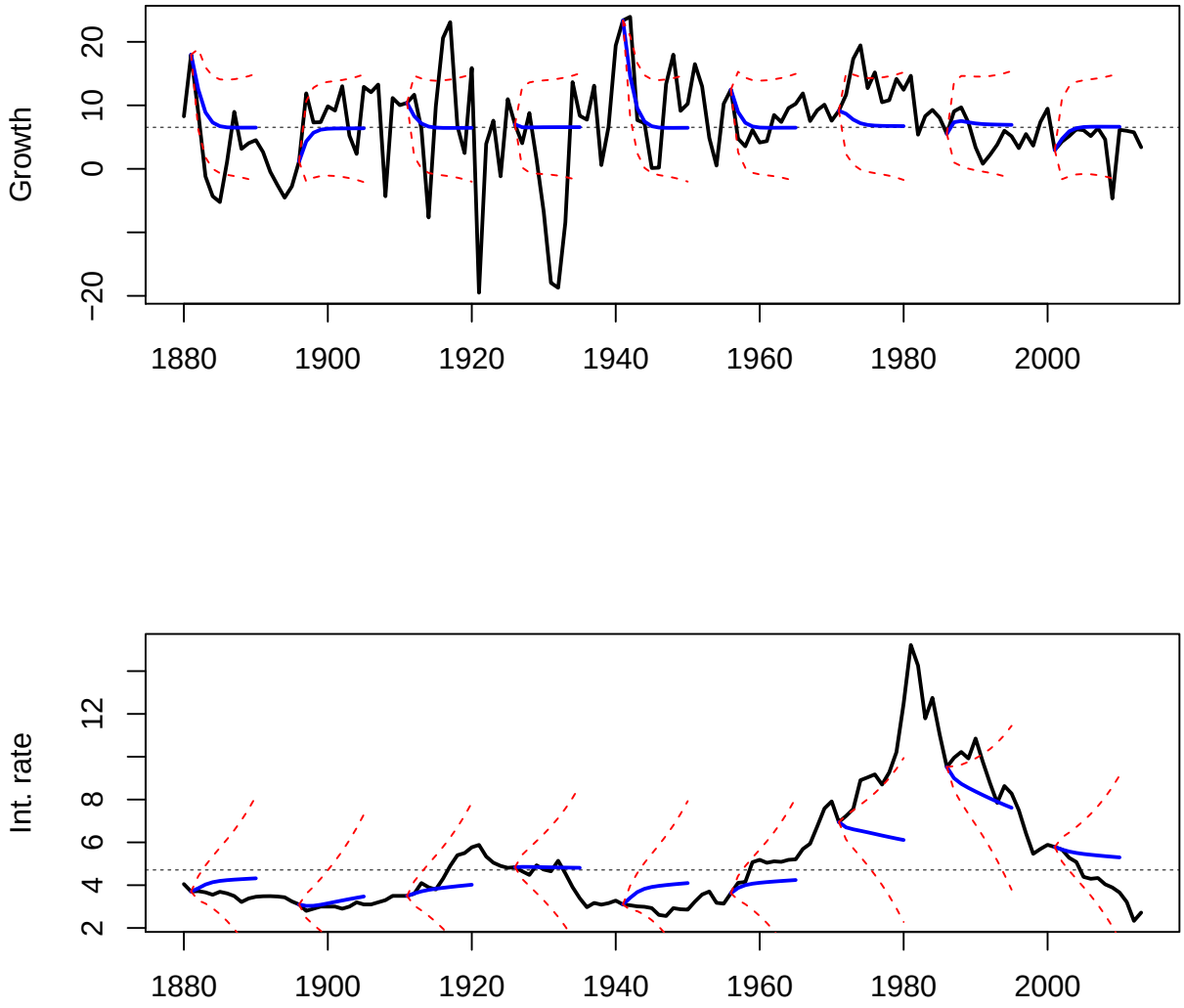

Figure 10: Unconditional optimal lag MLE in-sample forecasts for Canada

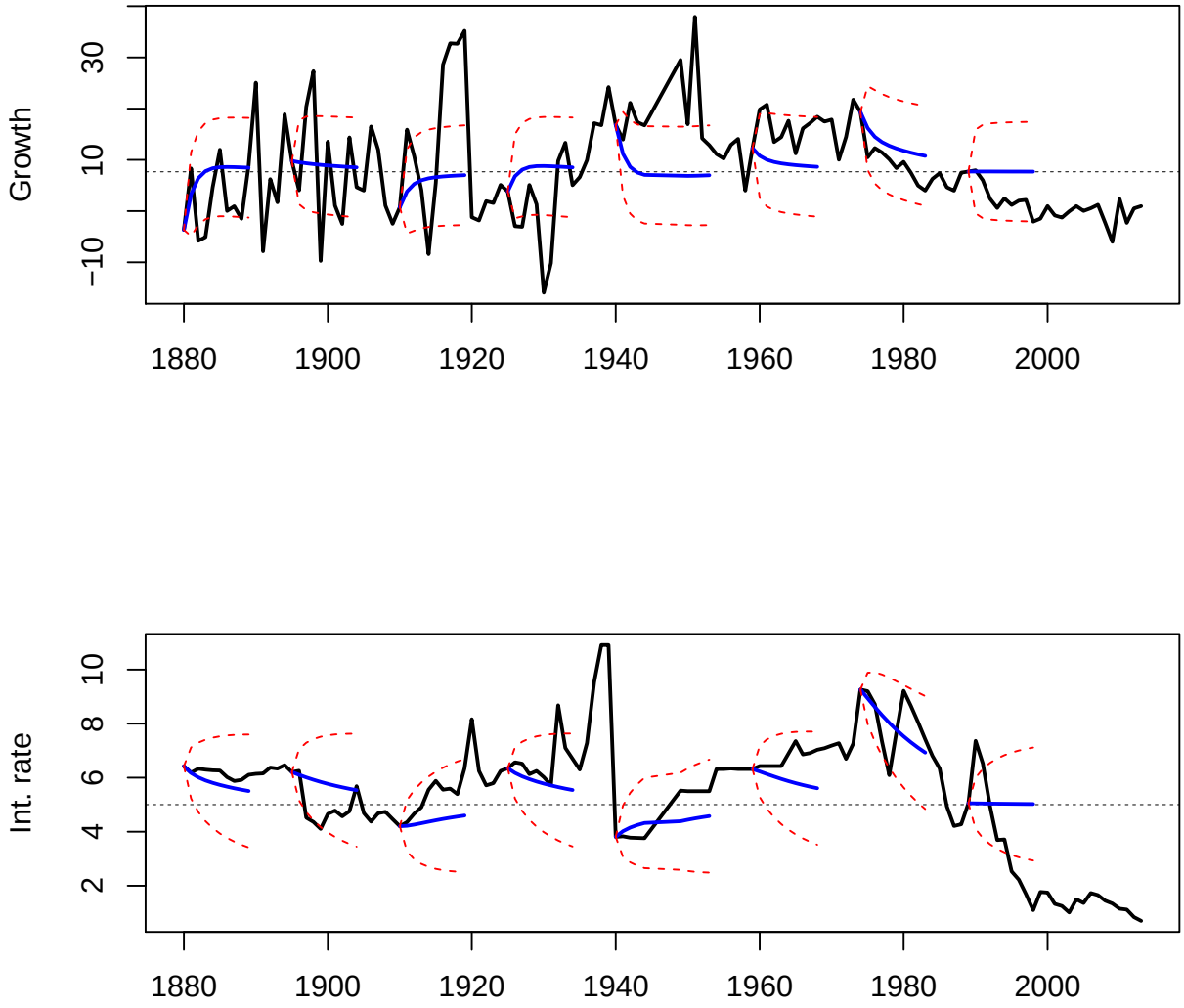

Figure 11: Conditional optimal lag MLE in-sample forecasts for Japan

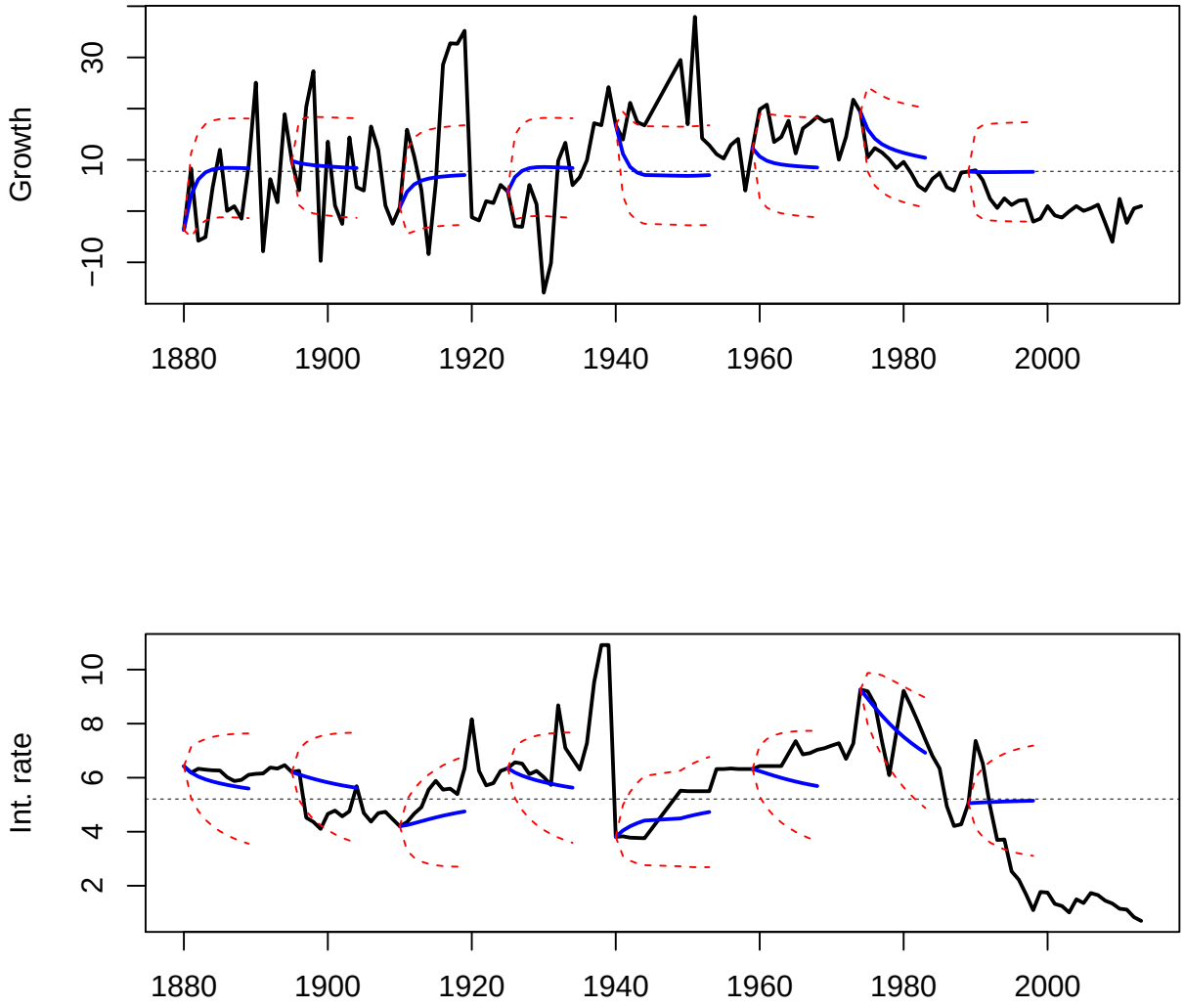

Figure 12: Unconditional optimal lag MLE in-sample forecasts for Japan

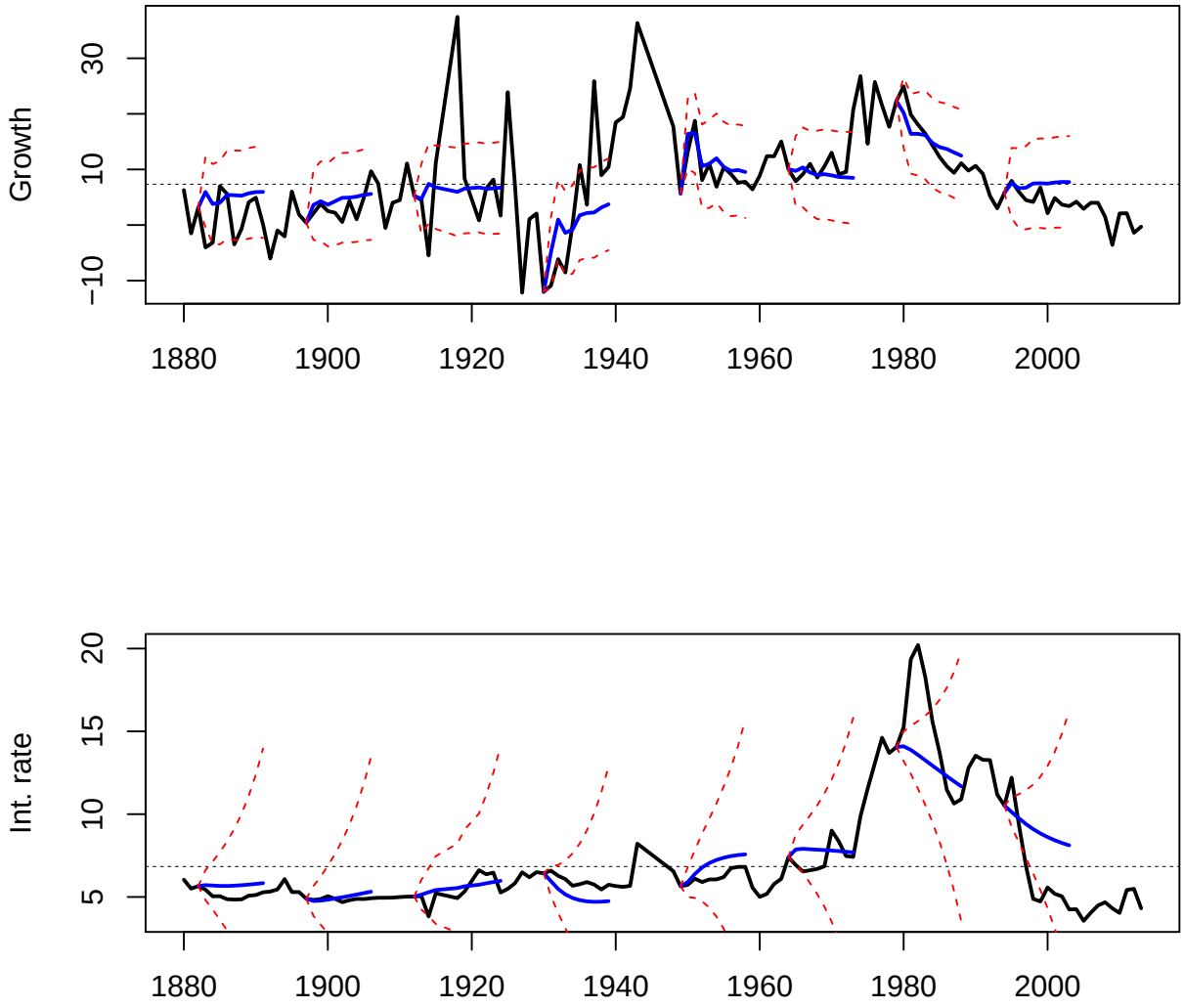

Figure 13: Conditional optimal lag MLE in-sample forecasts for Italy

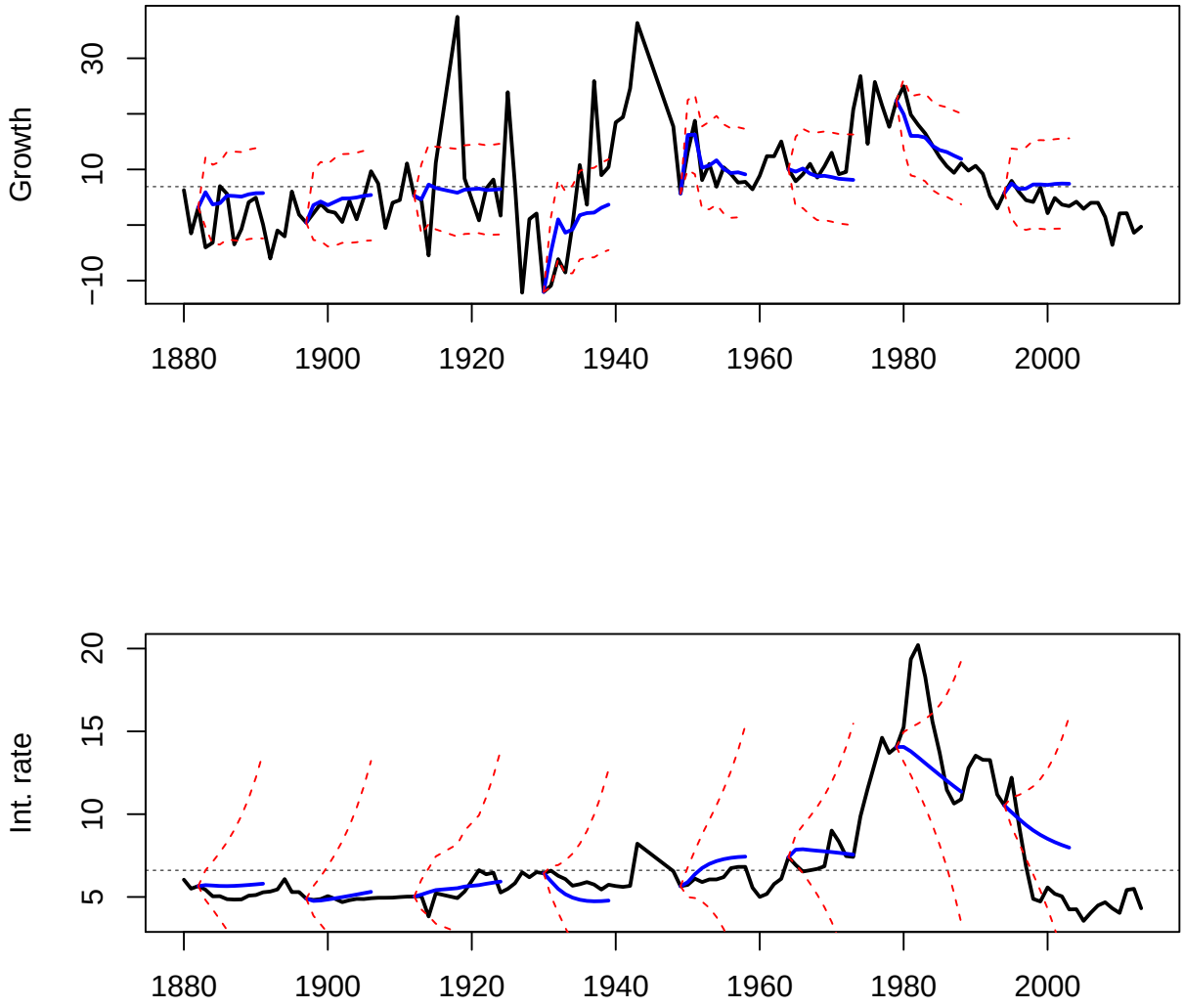

Figure 14: Unconditional optimal lag MLE in-sample forecasts for Italy

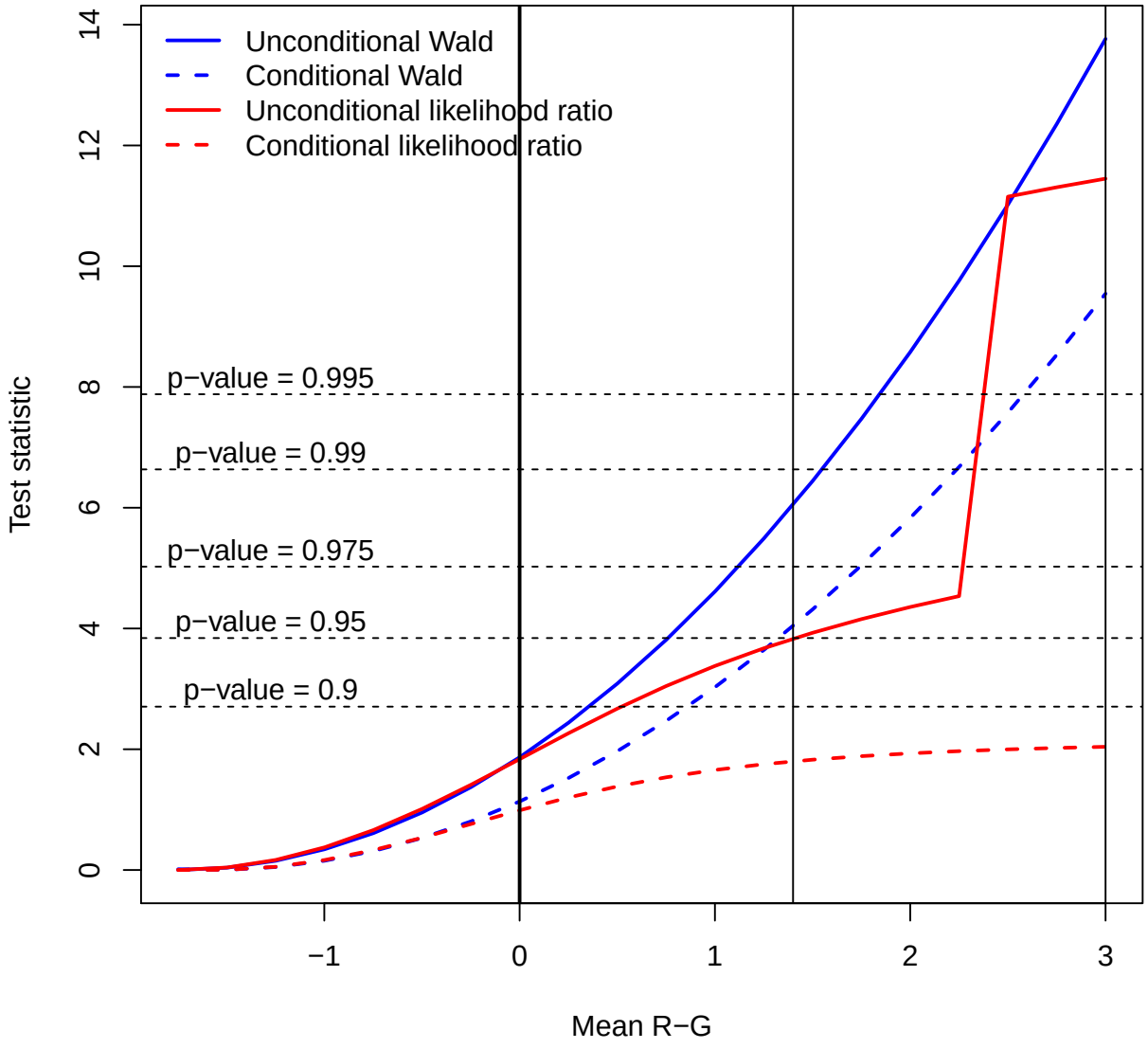

Figure 15: Optimal-lag hypothesis tests for USA

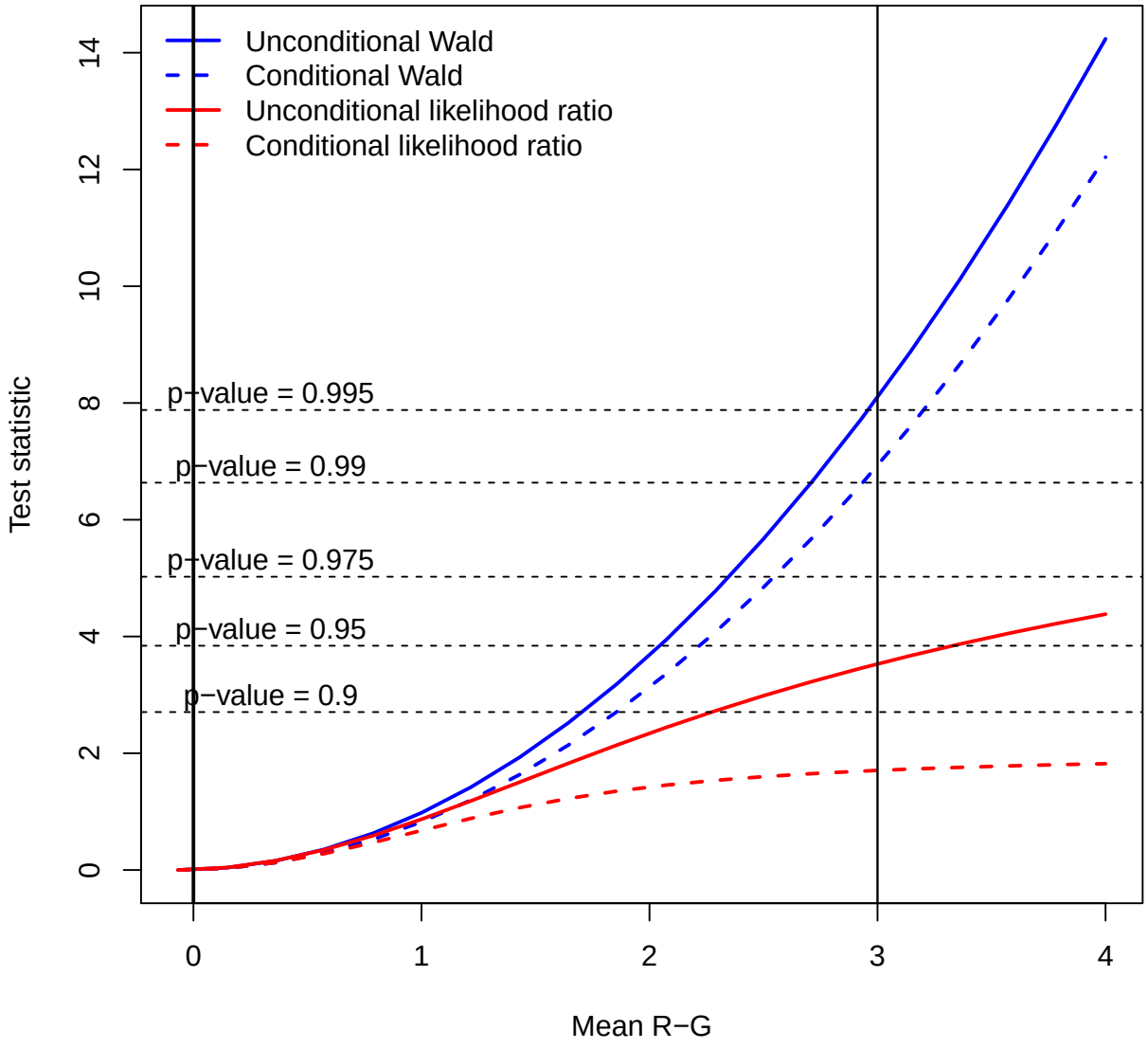

Figure 16: Optimal-lag hypothesis tests for France

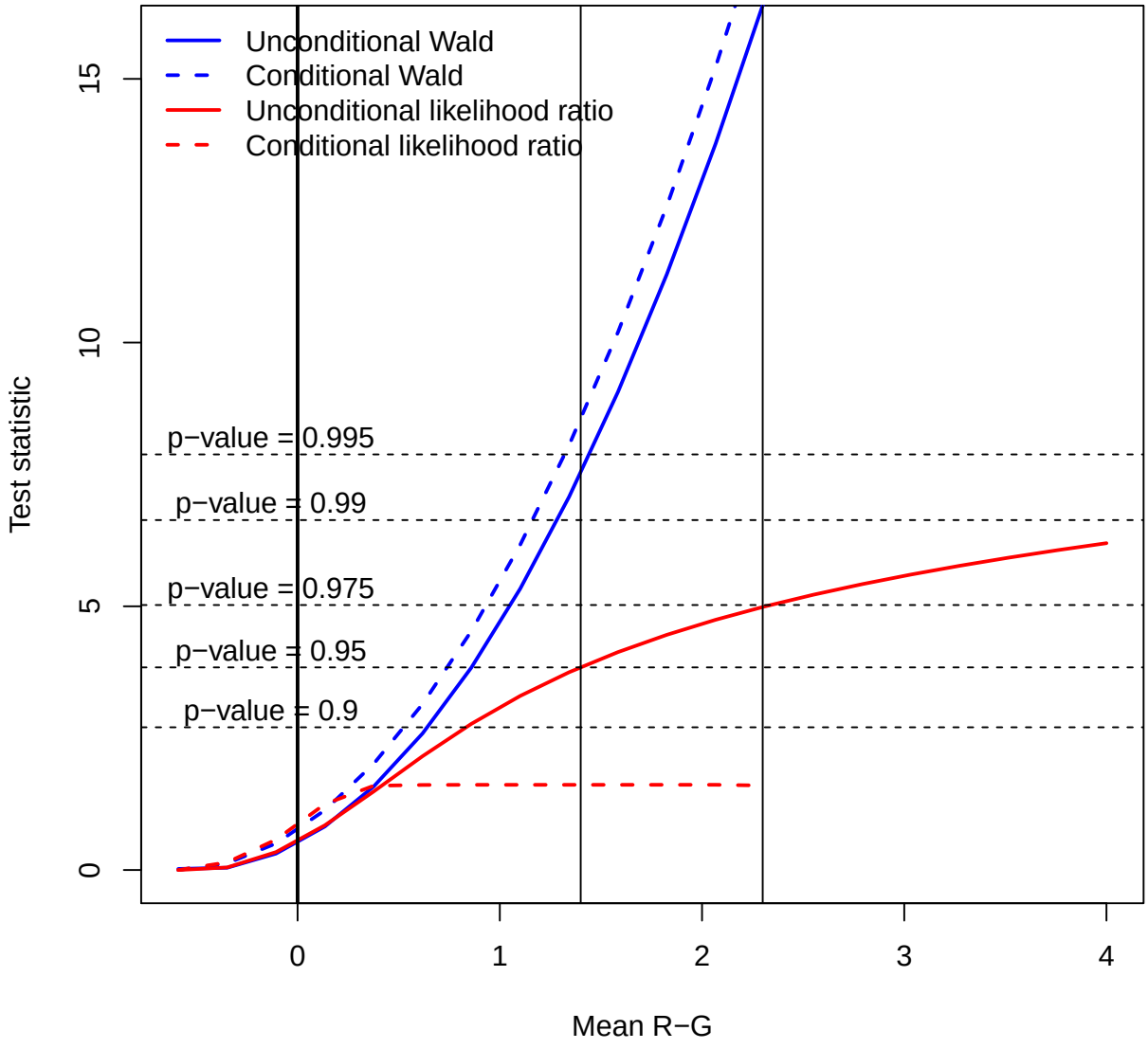

Figure 17: Optimal-lag hypothesis tests for UK

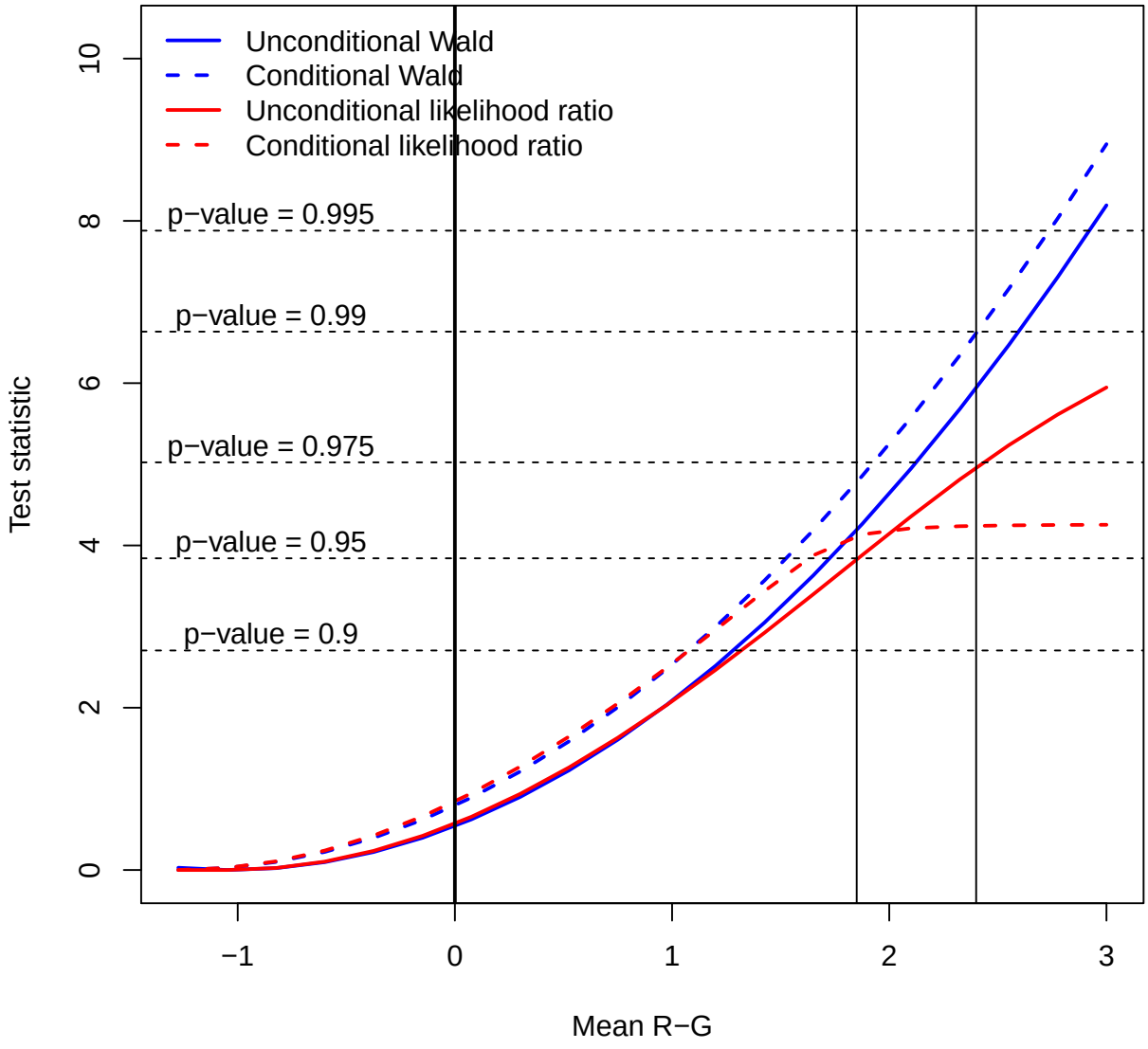

Figure 18: Optimal-lag hypothesis tests for Germany

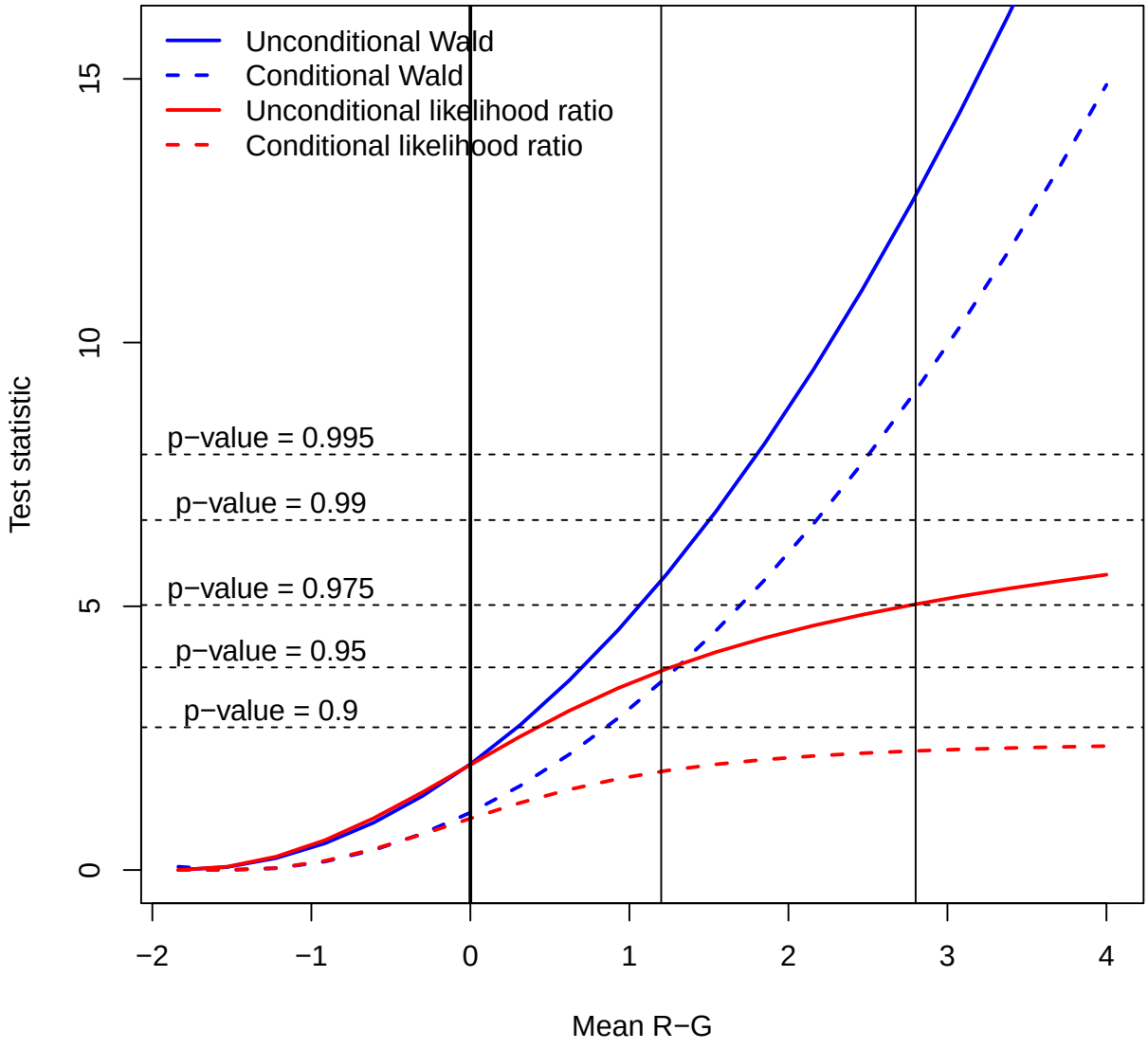

Figure 19: Optimal-lag hypothesis tests for Canada

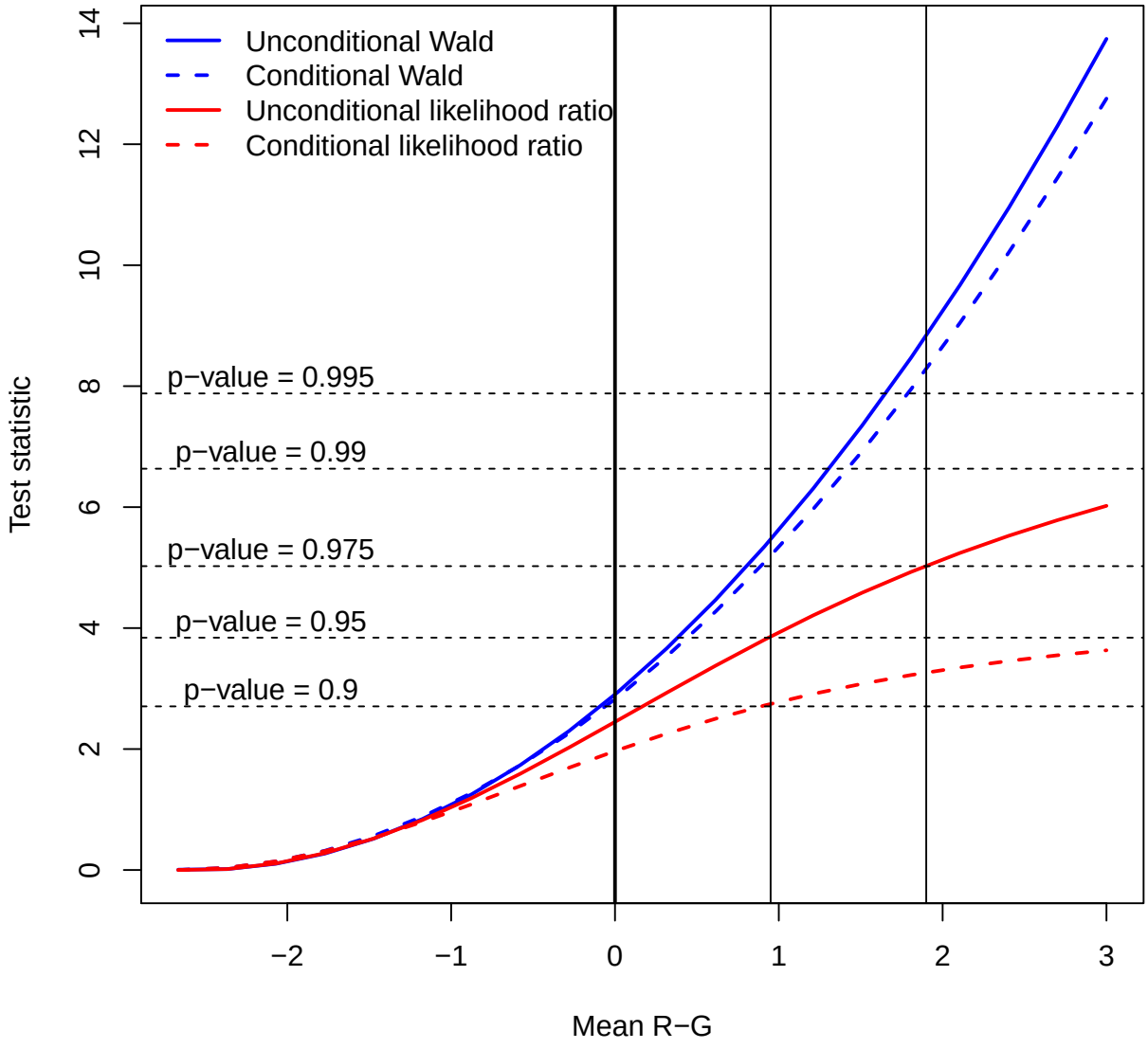

Figure 20: Optimal-lag hypothesis tests for Japan

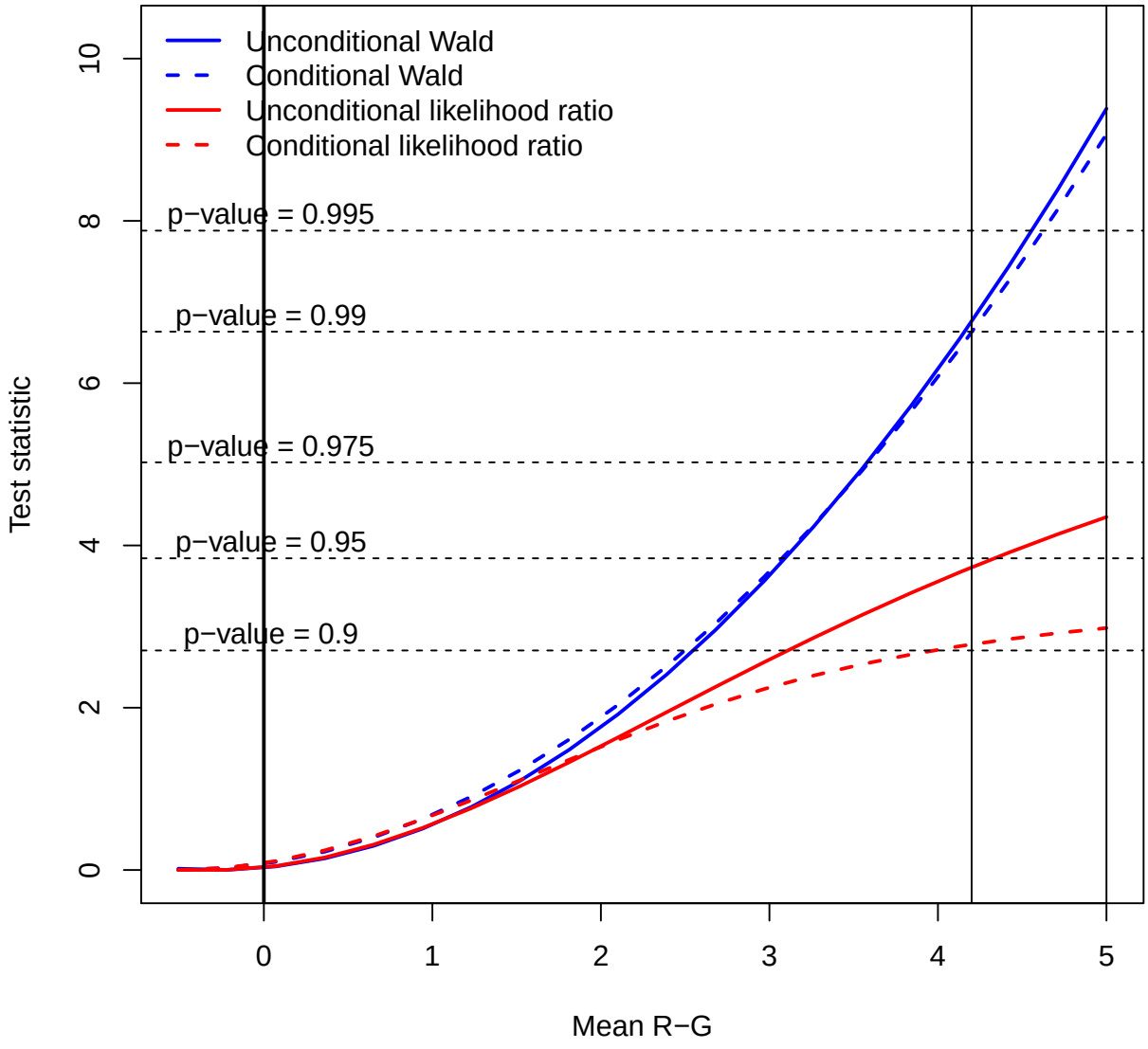

Figure 21: Optimal-lag hypothesis tests for Italy