Problem Set 5

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Part 2

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## Warning: package 'kableExtra' was built under R version 4.0.3
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Granger causality
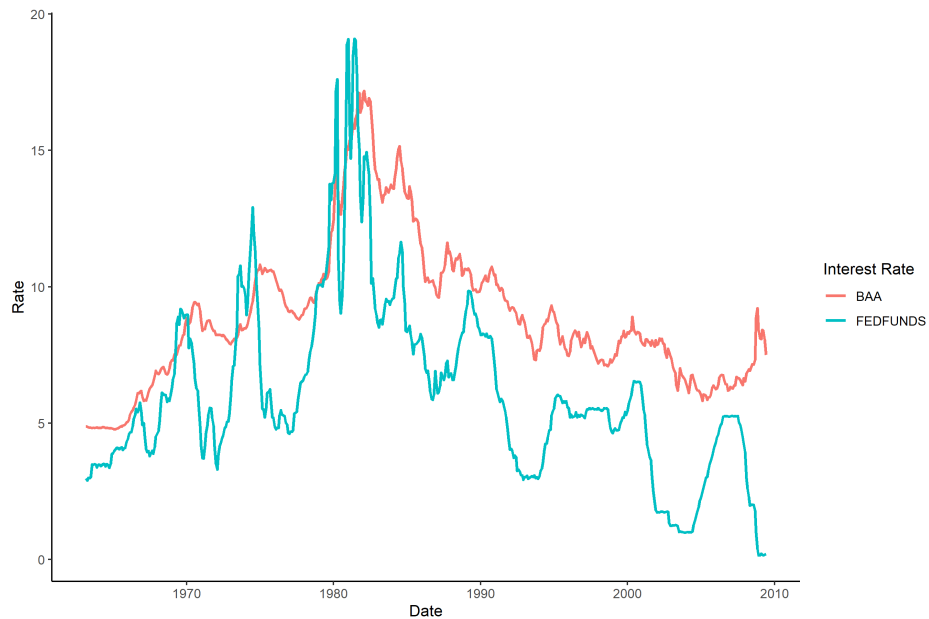

Figure 1: BAA and FED Funds rates time series

Table 1: Augmented Dickey-Fuller Test

| | BAA | | | | | | FEDFUNDS | | | | | |
| | Type 1 | | Type 2 | | Type 3 | | Type 1 | | Type 2 | | Type 3 | |
Lag	ADF	P-Value	ADF	P-Value	ADF	P-Value	ADF	P-Value	ADF	P-Value	ADF	P-Value
0	0.034	0.654	-1.507	0.522	-1.612	0.742	-1.015	0.316	-1.761	0.423	-2.242	0.474
1	-0.274	0.565	-1.861	0.384	-1.940	0.602	-1.513	0.138	-2.983	0.039	-3.404	0.053
2	-0.140	0.604	-1.690	0.452	-1.786	0.668	-1.278	0.222	-2.426	0.158	-2.865	0.211
3	-0.181	0.592	-1.745	0.430	-1.842	0.644	-1.225	0.241	-2.326	0.198	-2.781	0.247
4	-0.230	0.578	-1.824	0.399	-1.920	0.611	-1.143	0.270	-2.129	0.277	-2.600	0.323
5	-0.261	0.569	-1.881	0.376	-1.979	0.586	-1.158	0.265	-2.102	0.287	-2.554	0.343

Table 2: Augmented Dickey-Fuller Test: First difference of rates

| | BAA | | | | | | FEDFUNDS | | | | | |
| | Type 1 | | Type 2 | | Type 3 | | Type 1 | | Type 2 | | Type 3 | |
Lag	ADF	P-Value	ADF	P-Value	ADF	P-Value	ADF	P-Value	ADF	P-Value	ADF	P-Value
0	-15.086	0.01	-15.075	0.01	-15.131	0.01	-15.339	0.01	-15.326	0.01	-15.339	0.01
1	-15.104	0.01	-15.096	0.01	-15.176	0.01	-15.369	0.01	-15.356	0.01	-15.380	0.01
2	-11.928	0.01	-11.922	0.01	-12.008	0.01	-13.389	0.01	-13.378	0.01	-13.411	0.01
3	-9.859	0.01	-9.855	0.01	-9.942	0.01	-12.511	0.01	-12.501	0.01	-12.544	0.01
4	-8.664	0.01	-8.660	0.01	-8.752	0.01	-11.029	0.01	-11.022	0.01	-11.062	0.01
5	-8.021	0.01	-8.018	0.01	-8.114	0.01	-10.551	0.01	-10.544	0.01	-10.598	0.01

Table 3: Granger Causality Tests: BAA and FEDFUNDS

| | (1961-03)-(2009-06) | | (1961-03)-(1982-01) | | (1982-02)-(2009-06) | |
Lags	F	P-Value	F	P-Value	F	P-Value
BAA Rate Granger causes FED Funds Rate						
2	8.766	0.000	12.854	0.000	0.411	0.663
5	3.709	0.003	5.748	0.000	0.596	0.703
10	4.270	0.000	9.675	0.000	0.939	0.497
FED Funds Rate Granger causes BAA Rate						
2	1.658	0.191	0.107	0.898	3.857	0.022
5	1.716	0.129	1.252	0.286	1.925	0.090
10	1.944	0.037	3.100	0.001	0.496	0.892