2021-02-16 Time Series Classwork
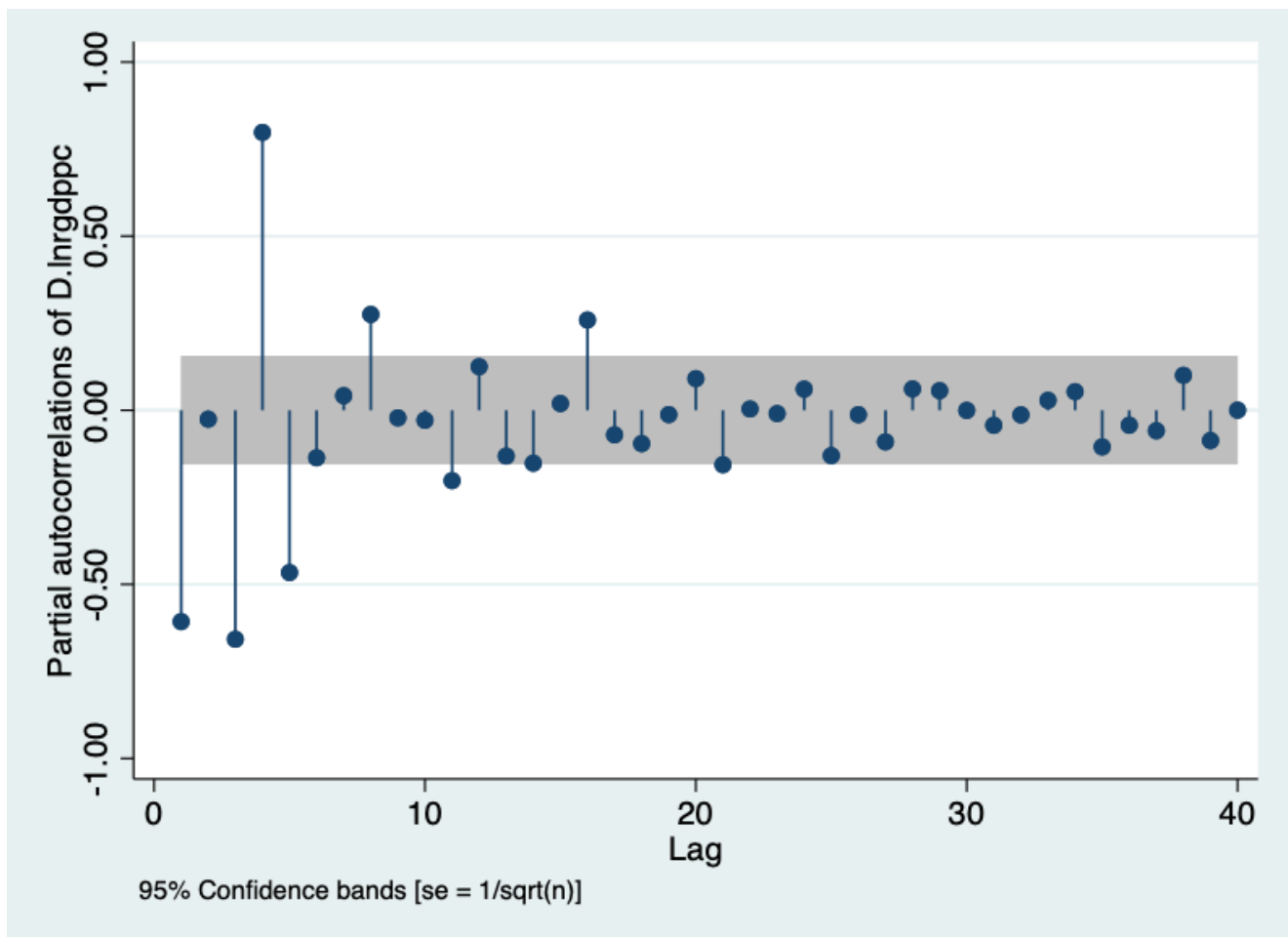
```
1  ac lnrgdp if tin(1980q1,2019q3)
```


Bartlett's formula for MA(q) 95% confidence bands

```
1  pac lnrgdp if tin(1980q1,2019q3)
```

Partial autocorrelations of lnrgdppc. 95% Confidence bands [se = 1/sqrt(n)]

```
1  pac d.lnrgdp if tin(1980q1,2019q3)
```

Partial autocorrelations of D.lnrgdppc

95% Confidence bands [se = 1/sqrt(n)]
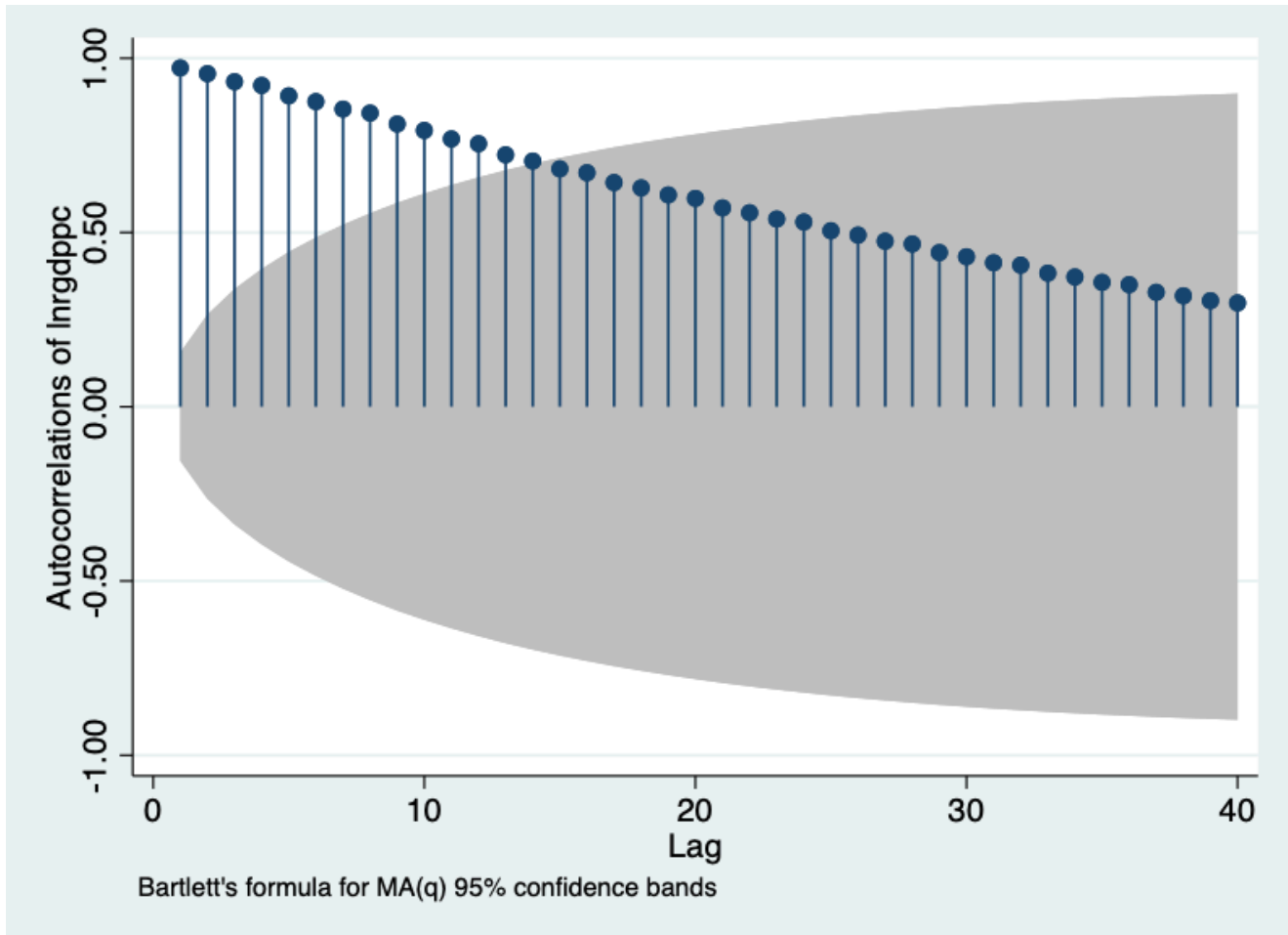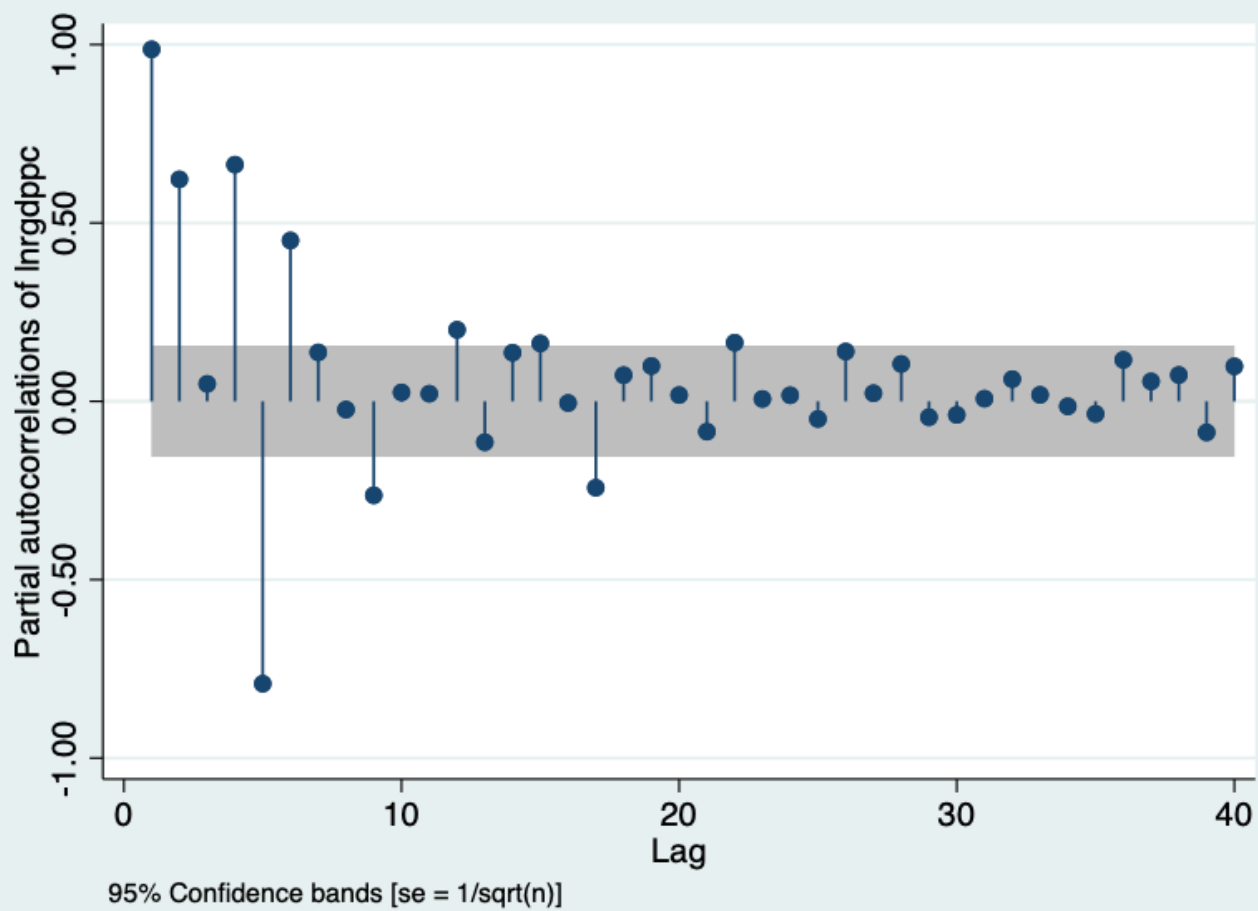
Strong year-over-year correlation

```
1   reg d.lnrgdp l.lnreratio date if tin(1980q1,2019q3)
```

Source	SS	df	MS Number of obs =	159
	F(2, 156) =	0.11		
Model	.000174096	2	.000087048 Prob > F =	0.8978
Residual	.12591447	156	.000807144 R-squared =	0.0014
	Adj R-squared =	-0.0114		
Total	.126088566	158	.000798029 Root MSE =	.02841
D.lnrgdppc	Coef.	Std. Err.	t P>t [95% Conf.	Interval]
lnreratio				
L1.	-.0092021	.0200453	-0.46 0.647 -.0487974	.0303932
date	-6.21e-06	.0000495	-0.13 0.900 -.0001039	.0000915
_cons	.0033183	.0085325	0.39 0.698 -.0135358	.0201724

Need to difference this one then take the seasonal difference of the differences

```
1  gen z=d.lnrgdppc - l4d.lnrgdppc
```

dfuller lnrgdp if tin(1980q1,2019q3), trend regress

```
1
2  | Dickey-Fuller test for unit root                    Number of obs   =
   159 |
3  | ------------------------------------------------------------ |
4  | Interpolated Dickey-Fuller ---------                         |
5  | Test          1% Critical      5% Critical      10% Critical |
6  | Statistic          Value              Value             Value |
7  | Z(t)              -4.297            -4.020            -3.442
   -3.142 |
8  | MacKinnon approximate p-value for Z(t) = 0.0032             |
9  |                                                             |
10 | D.lnrgdppc      Coef.   Std. Err.     t     P>t     [95% Conf. Interval] |
11 | lnrgdppc                                                    |
12 | L1.   -.2129173   .0495536    -4.30   0.000    -.3107998   -.1150347 |
```

```
13  |  _trend      .000911    .0002178      4.18    0.000      .0004807    .0013412 |
14  |  _cons      .4367175   .1007428      4.33    0.000      .2377216    .6357134 |
15  |                                                                     |
16
17
```

dfuller lnrgdp if tin(1980q1,2019q3), trend lags(4) regress

```
1
2   | Augmented Dickey-Fuller test for unit root          Number of obs    =
    159 |
3   | ---------------------------------------------------------- |
4   | Interpolated Dickey-Fuller ---------                        |
5   | Test            1% Critical       5% Critical       10% Critical |
6   | Statistic            Value             Value             Value |
7   | Z(t)               -2.920            -4.020            -3.442
    -3.142 |
8   | MacKinnon approximate p-value for Z(t) = 0.1560             |
9   |                                                            |
10  | D.lnrgdppc        Coef.   Std. Err.     t     P>t     [95% Conf. Interval] |
11  | lnrgdppc                                                    |
12  | L1.    -.0564162   .0193235    -2.92    0.004    -.0945935   -.0182389 |
13  | LD.    -.0608648   .0490022    -1.24    0.216    -.1576782    .0359487 |
14  | L2D.   -.0530661   .0472079    -1.12    0.263    -.1463344    .0402023 |
15  | L3D.   -.1106043   .0465007    -2.38    0.019    -.2024754   -.0187331 |
16  | L4D.    .8195014   .0458889    17.86    0.000     .728839     .9101639 |
17  | _trend    .000236   .0000851     2.77    0.006     .0000678    .0004041 |
18  | _cons    .1168117   .0390729     2.99    0.003     .0396156    .1940078 |
19  |                                                            |
20
21
```