Time Series and Seasonal Adjustment Estimation During the COVID-19 Pandemic

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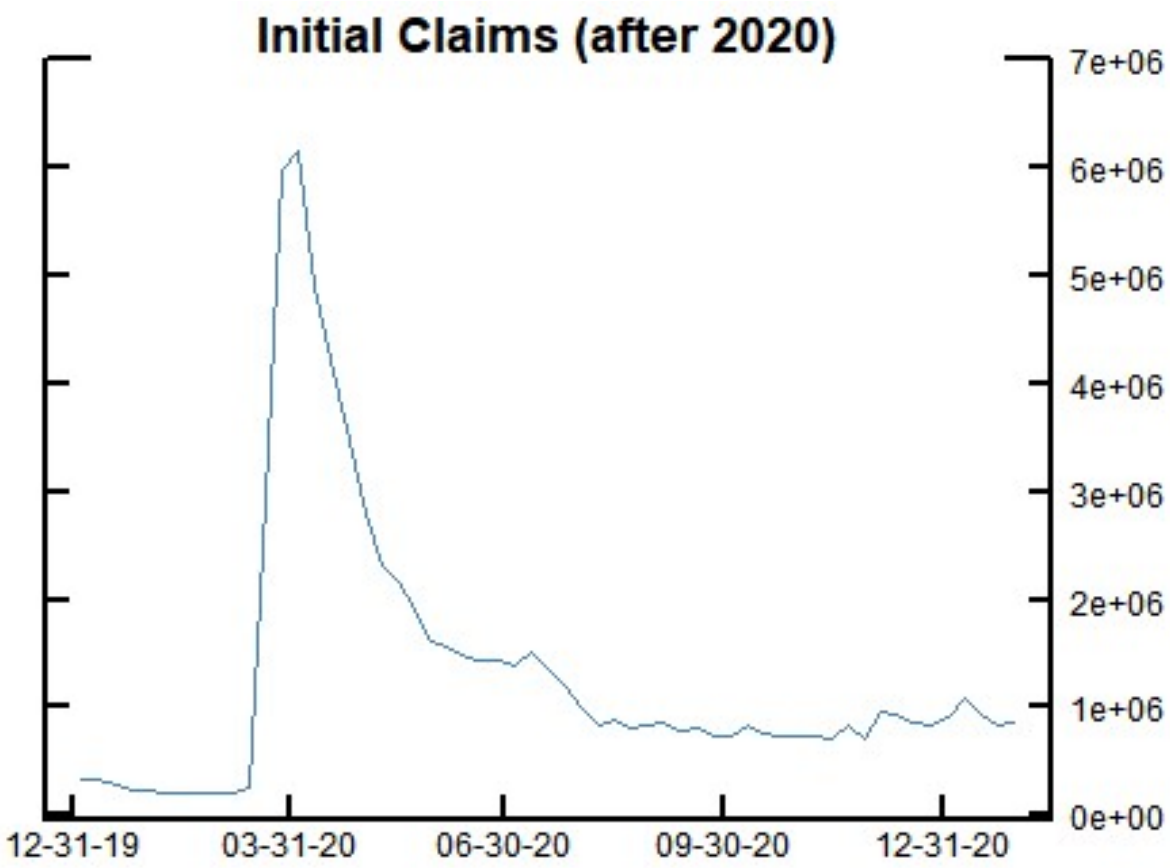
All statements are those of the presenter and do not reflect official policy at BLS.

Multiplicative vs Additive when large level shifts occur

- A multiplicative seasonal effect is assumed to be proportional to the level of the series; an additive seasonal effect is unaffected by the series level
- But we needed to reevaluate this choice in light of the pandemic
  - Seasonality is being overwhelmed by abnormally large level shifts clearly visible in NSA series apparently **without** the need for seasonal adjustment.


Initial Claims (after 2020)
7e+06
6e+06
5e+06
4e+06
3e+06
2e+06
1e+06
0e+00
12-31-19
03-31-20
06-30-20
09-30-20
12-31-20

Multiplicative vs Additive when large level shifts occur

- Multiplicative SA, by magnifying seasonal variation, may obscure rather than reveal underlying movements in the series
- May lead to
  - under adjustments during periods of normally high seasonality
  - over adjustments during periods of low seasonality
- For additive seasonal adjustment, magnitude of seasonal variation will be much smaller relative to the level of the series.
  - Resulting SA series will be very close to NSA series, reflecting obvious fact that seasonality no longer obscures the level of the series

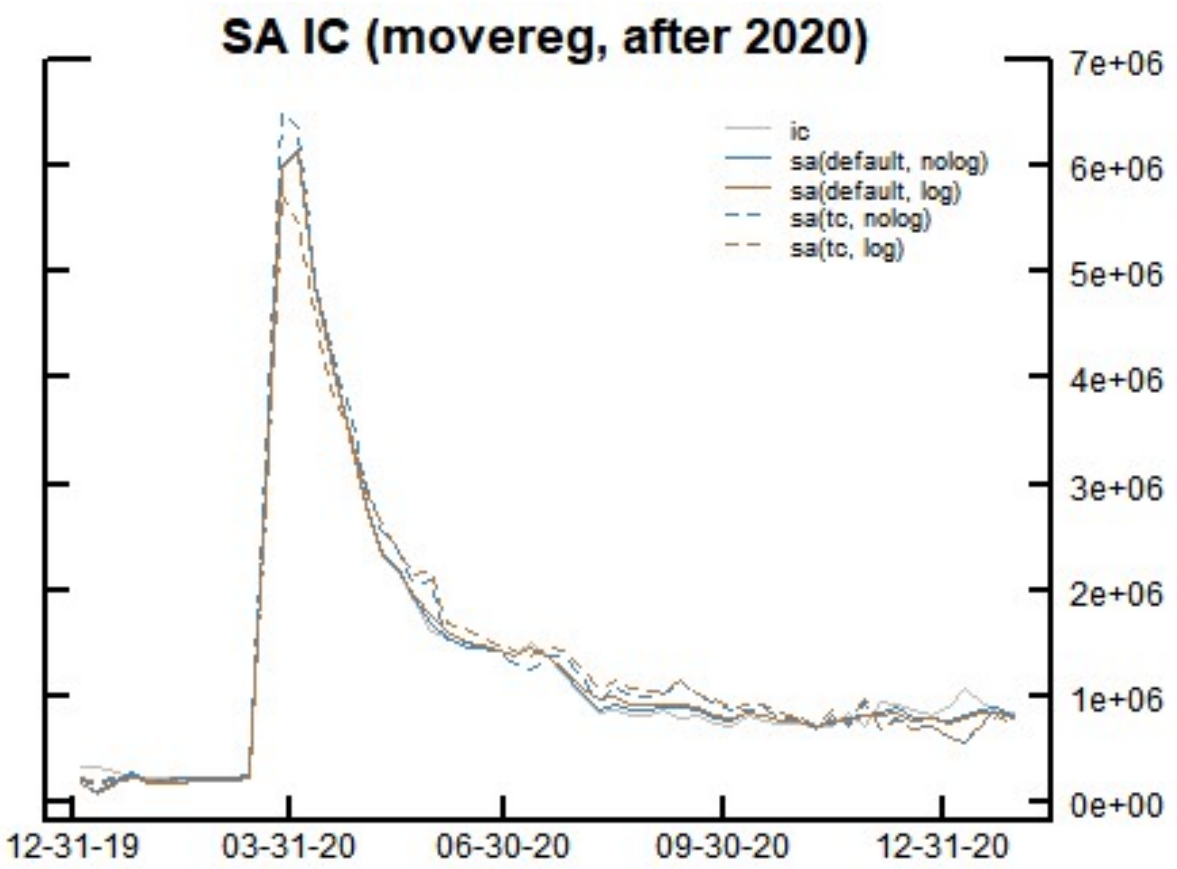
Weekly UI draws attention

- Initial and continued jobless claims are the most timely available data on labor market conditions
- Adjustments came under fire
  - "The multiplicative approach does not work well with [recent initial jobless claims] … economists should just look at the raw data before any seasonal adjustment" (Heerdt & Wright, Center for Financial Economics)

Even Bart Simpson took notice!

Movereg

- Needed to add new features for the pandemic (now Version 6.0)
  - Can generate additive (no log) seasonal adjustments
  - Addition of temporary change (TC) outliers
  - Selected output changed to facilitate input of results into R


SA IC (movereg, after 2020)
ic
sa(default, nolog)
sa(default, log)
sa(tc, nolog)
sa(tc, log)
7e+06
6e+06
5e+06
4e+06
3e+06
2e+06
1e+06
0e+00
12-31-19
03-31-20
06-30-20
09-30-20
12-31-20