

Donation Dynamics: Do Critical Campaign Events Influence Contributions?

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Individual contributions matter in presidential elections. Why do individuals give to such campaigns—more specifically, **what events motivate individual campaign contributions?**



Attention on campaign chest strength: do the presidential candidates have the financial impetus to continue? Are voters showing support for them? Is it filling up? Is it drying up?

Introduction

The why question when question

- Test: if donors are strategically motivated or momentum driven, they **must be responsive to certain "events"**
- Sequential segmentation spline method to identify structural breaks while estimating smooth curves

% of Total Receipts from Individuals			
Biden 2020	99.8%	Trump 2016	43.5%
Trump 2020	43.5%	Sanders 2016	97.5%
Sanders 2020	92.8%	Clinton 2016	69.3%
Warren 2020	90.2%	Cruz 2016	97.6%
Buttigieg 2020	98.7%	Carson 2016	97.5%
Klobuchar 2020	92.5%	Rubio 2016	93.9%
Harris 2020	95.8%	Bush 2016	94.6%
		Kasich 2016	97.2%

Do donors respond to key events?

- Utility from giving \neq constant: *dynamic*, but little research
- Assumption: slow-moving trend + rapid changes

Given a smooth trend, expect **sharp boosts of money at key events** e.g. initial/surprise victories, if donors are

- **instrumental** ← strategic response to new information on viability
- **expressive but mostly momentum driven** ← newly jolted enthusiasm

Data and Methods

- Federal Election Commission (FEC) data, 2016 & 2020 cycles
- Extremely sparse as a panel, so turn into a **daily time-series**
- Two quantities of interest, by each presidential candidate (for desirable residual properties, use $\log(x)$)
 1. Total contribution amounts (USD) per day (**sum**)
 2. Total contribution occurrences per day (**counts**)

Want to

- **Capture both slow trend and rapid changes** (critical events that create shocks that *persist*)
- Have an objective, automated way to determine # of jumps

Ratkovic, M. T., & Eng, K. H. (2010). Finding jumps in otherwise smooth curves: Identifying critical events in political processes. *Political Analysis*, 18(1), 57-77.

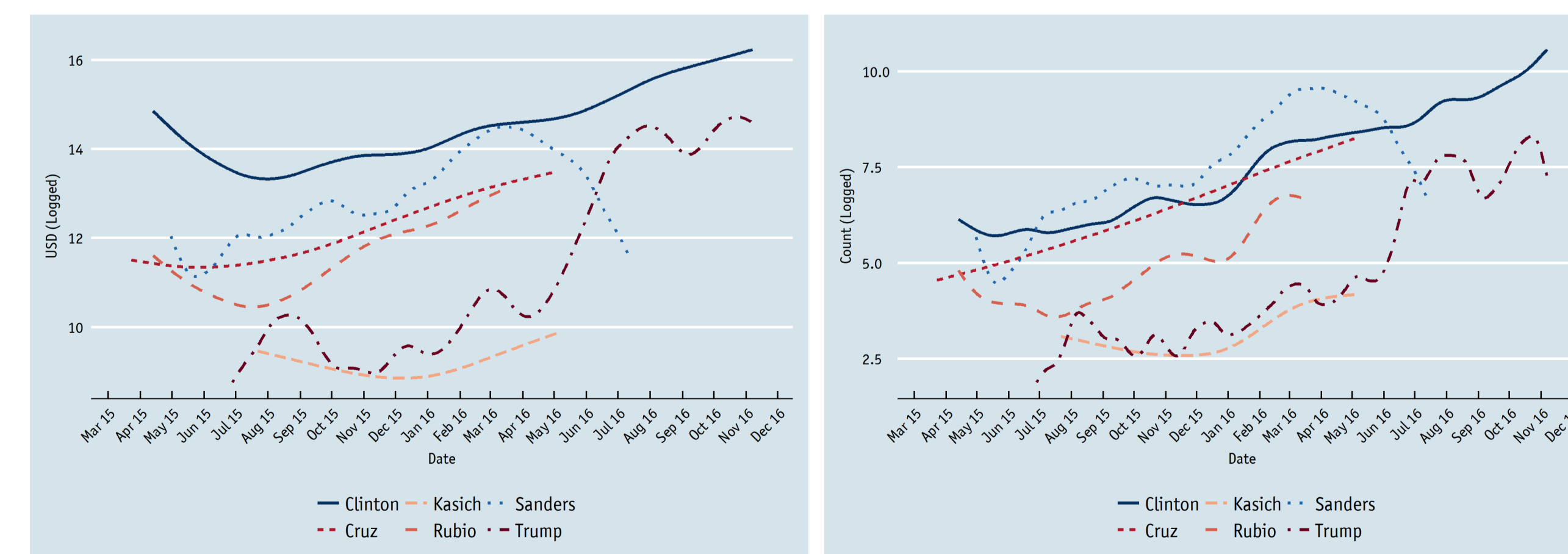
- Fit a cubic smoothing spline to data while using a binary segmentation algorithm to sequentially add jumps to spline's unpenalized space
- Estimator w/ unpenalized linear trend + penalized interpolation
- If jump locations are known, add them directly to unpenalized space (**partial splines with jumps**)

$$\hat{f}_{SS} = \min_{f, \beta} \sum_{i=1}^n \left(y_i - f(x_i) - \underbrace{\beta I\{x > \text{breakpoint}\}}_{\text{parametric}} \right)^2 + \lambda \int \{f''\}^2 dt$$

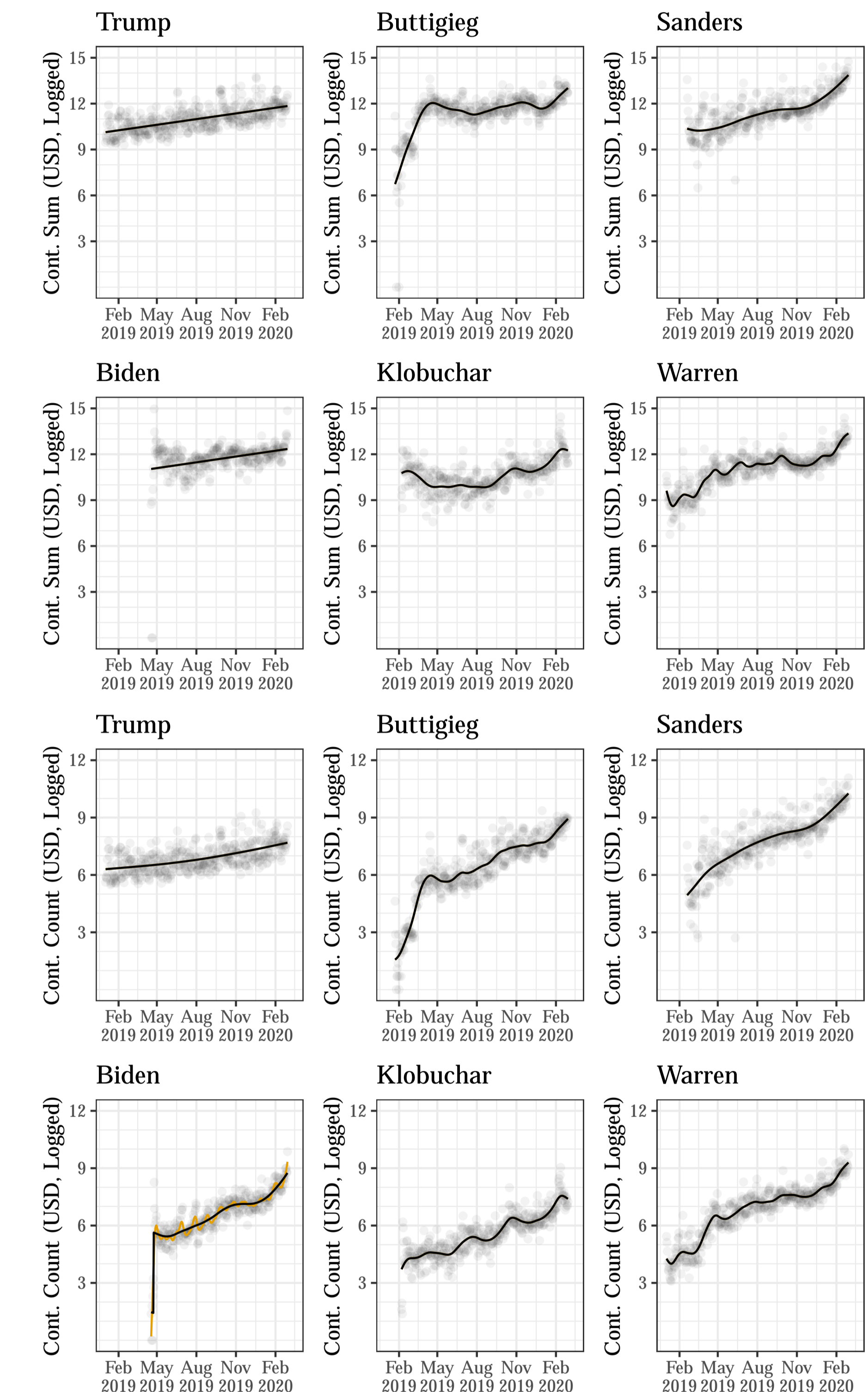
- Modified Bayesian Information Criterion (BIC) stopping rule

2016: No Effects of Key Events

No events a priori modeled or modeled (e.g. Iowa caucus, Super Tuesday, Podesta emails or Hollywood Access scandal, ...), same result: no critical events detected



2020: Data Incoming, Similar Results



Conclusion

New methodology to data, focus on hitherto ignored dynamics—no jumps found with known events at national level, quite smooth process

- Effect of requiring certain number of unique contributors for Dems 2020? COVID-19 effect?
- Subject to bootstrap to tackle false positives/noisy jumps

Contributions \neq polls, cannot expect sustained changes