The Impact of Credit Rating on Credit Default SwapMarket: Evidence from Sovereign Downgrades

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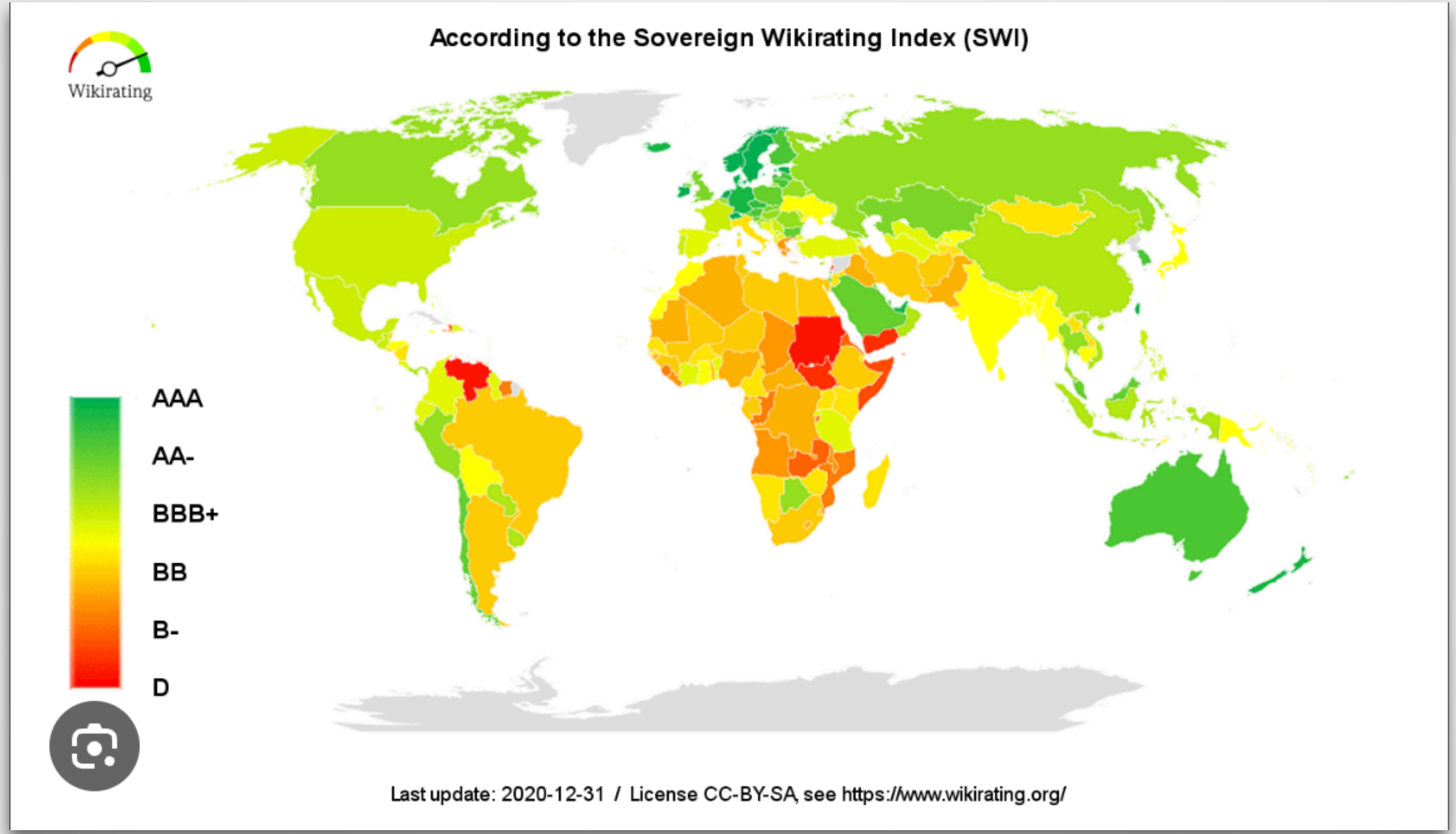
Sovereign credit ceiling



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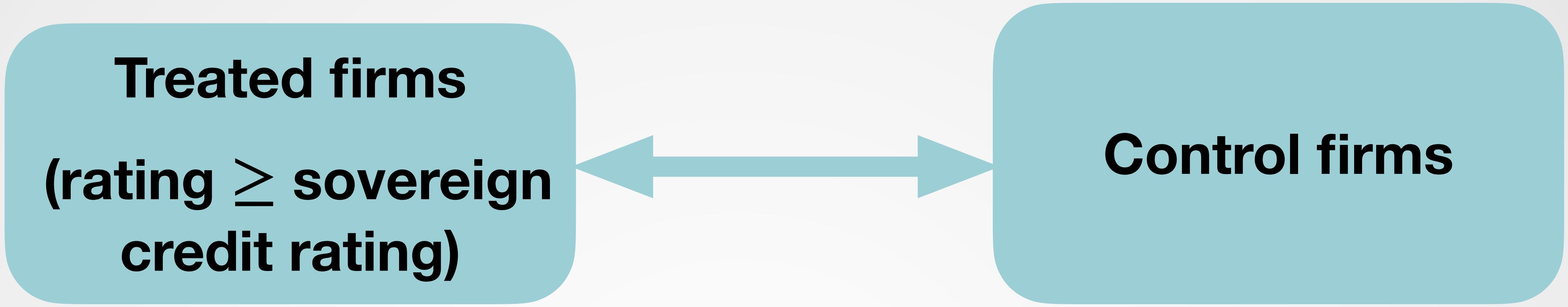
Motivations



- **Credit rating downgrades**
- Use Differece-in-Difference (DID) anlaysis
  1. CDS spreads of treated firms increased 27.33%
  2. Treated firms with lower Tobin's Q, less cash flow, fewer net assets, higher political risk, undergo more increases in the CDS spread.
  3. Patterns of recovery rate and term structure of the treated firms show consistent results

x-axis means the change of credt rating change?

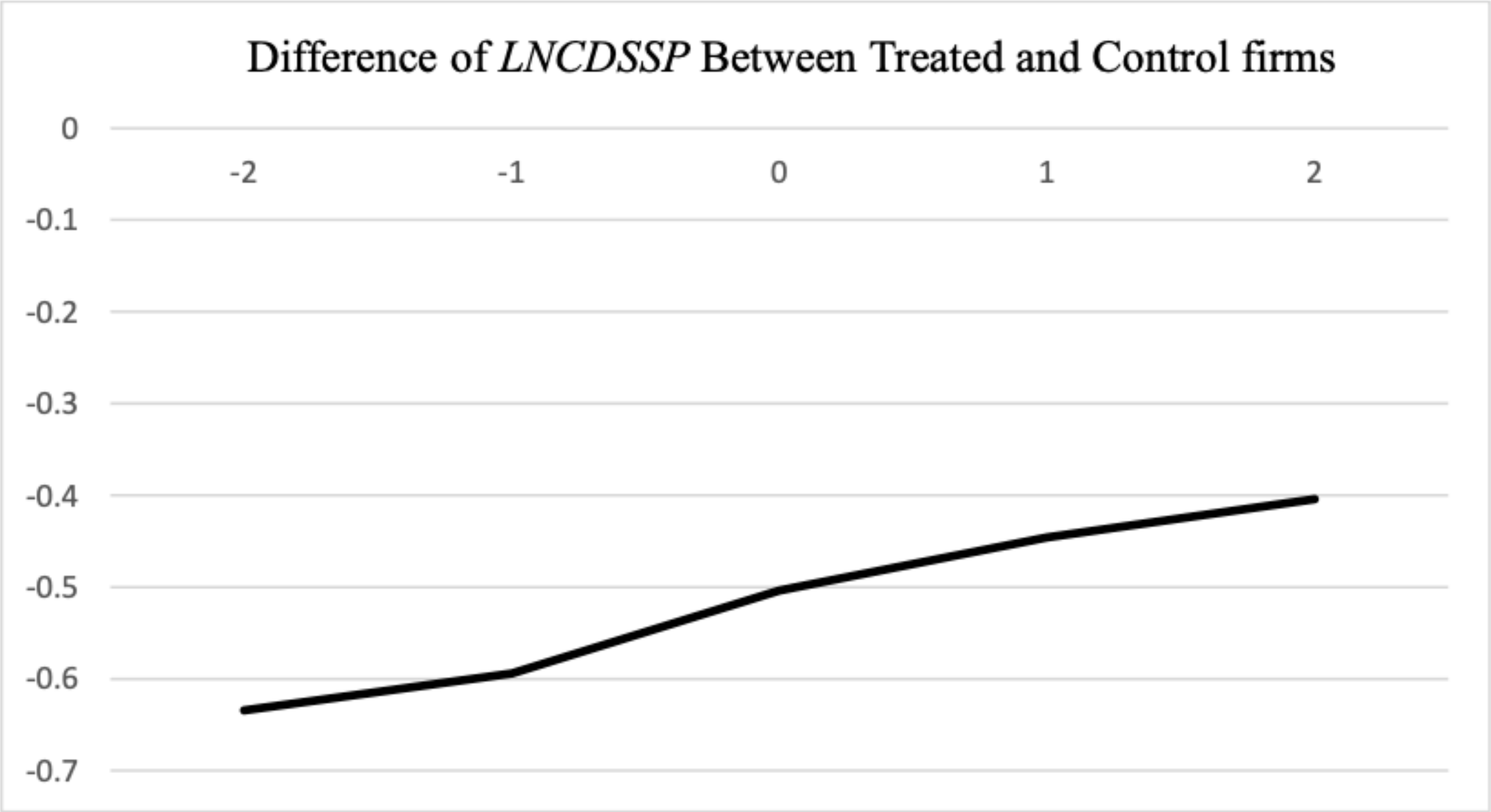


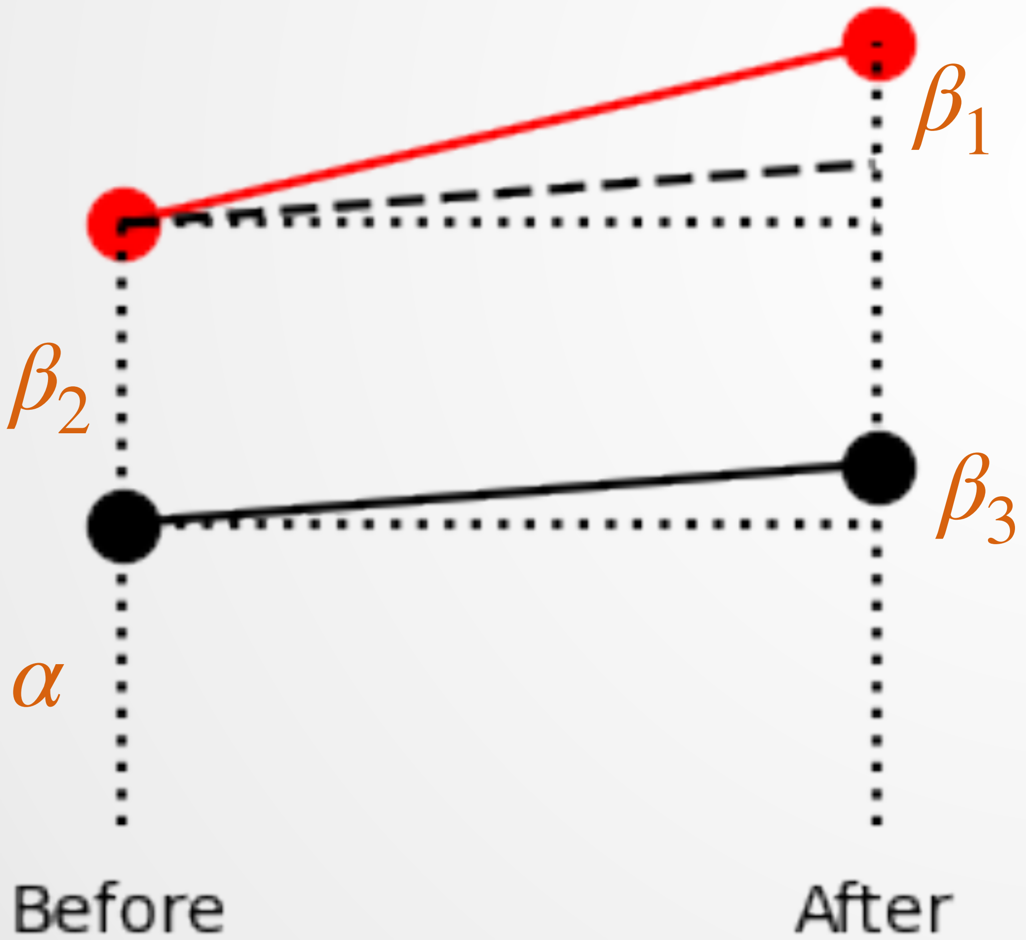
Figure 1: The trend of the difference in the *LNCDSSP* between the treated and control firms around the downgrades of sovereign credit ratings

Treated firms have lower CDSSP!

Revisiting the DID estimator

$$y_{it} = \alpha + \beta_1 Treat_{i,t-1} \times Downgrade_t + \beta_2 Treat_{i,t-1} + \beta_3 Downgrade_t + \varepsilon_{i,t}$$

Treat Control



$$\begin{cases} \alpha, & \text{control, before} \\ \alpha + \beta_2, & \text{treat, before} \\ \alpha + \beta_3, & \text{control, after} \\ \alpha + \beta_1 + \beta_2 + \beta_3, & \text{treat, after} \end{cases}$$

Issues in DID

- Procedures of the DID estimator:
    - Step 1: $\Delta y_{C,t} = y_{C,t} - y_{C,t-1}$
    - Step 2: $\Delta y_{T,t} = y_{T,t} - y_{T,t-1}$
    - Step 3: $\Delta y_{T,t} - \Delta y_{C,t}$
- DID estimator
    - Parallel trends assumption. Visualization?
    - Time-varying unobserved confounders?

Data

- Study period: 2003 to 2019
- Number of total observations?
- Ratio of treated firms to control firms?
- Frequency of downgrades & upgrades?
- Distributions of the countries?
- Very high R^2-adj!

Practical implementation

- When sovereign credit rating downgrades,
  - buy CDS of treated firms?
  - Or just an irrational behavior of market price of CDS?
- Further concerns
  - Emerging markets or countries with lower credit ratings?
  - Symmetry: Downgrades vs upgrades?

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