New Equilibrium Construction

From "to_do_list.tex":

Take out renegotiation

- Add more basic tradeoff
- (??) Draw inverted U for lobby
- Now my short punishments don't rest on renegotiation
  - So now, for main analysis, must assume that we're constraining attention to a certain class of punishments: symmetric, and "Punish for T periods then go back to cooperation"
    - Go back to start if deviate should work for governments, but I think I need something else for lobbies since they would like that
  - Can I show that mine are optimal in this class?

January 17, 2015

- Must show players are best responding in every subgame, on and off the eqm path
- I'm going to try to use reversion to the static nash, but this is not necessarily subgame perfect (deviations can trigger changes in future periods)
  - Basic intuition: lobby wants punishment to go longer, leg wants it to go shorter
  - Ideally, want each to choose static BR in each period of punishment: in non-cooperative state, you can pick whatever you want, but the other guy is doing whatever he wants; τ^{tw} is independent of what he does
    - BUT it's not independent of lobby's effort

Equilibrium: Executives set trade agreement at $t = 0$. At $t \geq 1$, lobbies choose e, leg chooses applied τ

- $\forall\ t \geq 1$, leg applies τ^A if
  1. $\tau \leq \tau^A$ was applied last period

2. There have been T periods of punishment: I think $\tau \geq \tau^N$ and $e \leq e^N$

- Not sure how to specify lobby in these cooperation periods: $e = 0$ if $\tau \geq \tau^A$ (in any period? how are they involved in punishment? they're not really)
- if $\tau > \tau^A$ within the last T periods, leg applies $\tau^N(e^N)$

January 19, 2015

- Think of punishment scheme being designed either by execs or by supranational body like WTO
- Then want to know whether it's an eqm for leg and lobbies to follow the rules

Classes of subgames

1. $\tau \leq \tau^A$ last period, $e = 0$, and no violation within last T periods (i.e. these conditions have held for at least T previous periods)
2. Conditions in (1) held for at least T periods up to previous period, but there was a violation last period
    - Implies we start punishing this period, and punish for $T - 1$ more periods before switching back to (1)
3. A punishment was initiated within the last $T-1$ periods, and punishment has been followed since then
    - Implies we punish for the rest of the duration of the specified punishment period (if there have been i periods of punishment so far, we punish this period and $T - i - 1$ more periods before switching back to (1)
4. Like 2, but someone did not follow the punishment in $t - 1$
    - If it was legislature and $\tau^D > \tau^N$, we don't care. (can describe punishment as $\tau \geq \tau^N$ I think)
        - If it was leg and $\tau^D < \tau^N$, restart at (2)
    - If it was lobby and $e^D > e^N$, we don't care. (can describe punishment as $e \geq e^N$ I think)
        - If it was leg and $e^D < e^N$, restart at (1)

5. Like 3, but someone did not follow the punishment in $t-1$

   - Same as 4, except constraints may differ by length of remaining punishment
     - I've shown condition for lobby is constant through time except in last period, where they'll never pay
     - Need to pay special attention to leg's condition in this last period