Modified Legislative Constraint

Here I change the legislative constraint so that future political economy weights are evaluated according to anticipated lobbying effort, instead of the current period, or "break" lobbying effort as in the draft submitted to the JIE

- This is an attempt to keep the legislative constraint from collapsing when acknowledging the endogenous impact of lobbying effort on the break tariff, which I had not fully incorporated in the previous drafts

We can write the executives' joint problem as

$$\max_{\boldsymbol{\tau^a}} \frac{\boldsymbol{W}_{\mathrm{E}}(\boldsymbol{\tau^a})}{1-\delta_{\mathrm{E}}} \quad \text{subject to} \tag{1}$$

$$\frac{\delta_{\mathrm{ML}}-\delta_{\mathrm{ML}}^{T+1}}{1-\delta_{\mathrm{ML}}}\left[W_{\mathrm{ML}}(\gamma(0),\boldsymbol{\tau^a})-W_{\mathrm{ML}}(\gamma(e_{tw}),\boldsymbol{\tau^{tw}})\right] \geq W_{\mathrm{ML}}(\gamma(e_b),\tau^b(e_b),\tau^{*a})-W_{\mathrm{ML}}(\gamma(e_b),\boldsymbol{\tau^a}) \tag{2}$$

and

$$e_b \geq \pi(\tau^b(e_b))-\pi(\tau^a)+\frac{\delta_{\mathrm{L}}-\delta_{\mathrm{L}}^{T+1}}{1-\delta_{\mathrm{L}}}\left[\pi(\tau^{tw})-e_{tw}-\pi(\tau^a)\right] \tag{3}$$

- Lobby's condition can't hold unless $\overline{e} \geq e_{tw}$
  - Intuition: lobby's net profit is maximized at e_{tw}: if you're using an effort level below this to reduce the net profit and make the lobbying constraint hold, the lobby will just increase effort up to e_{tw}. So have to force lobbying effort above lobby's optimal level
  - Only holds at $\overline{e} = e_{tw}$ if net profit is exactly $\pi(\tau^a)$, in which case lobby is indifferent between trade war and trade agreement.
- So, the question is: when does there exist a τ^a such that $\overline{e} \geq e_{tw}$ and the pair $(\tau^a, \overline{e})$ satisfies the lobby's constraint?
  - Intuitively, how do you need to set τ^a so that $\overline{e}$, which is derived from Expression 2 at equality, implies that τ^b is enough larger than τ^{tw} so that Expression 3 holds?
  - Or, am I even thinking about $\overline{e}$ anymore?

    * Yes, but it has to be driven by setting τ^a high enough (otherwise, lobby would choose lower effort level, and Expression 3 would fail

- Take $\tau^b = \tau^{tw}$ (note that lobby's constraint is still probably a problem, but this is a benchmark). Then it must be that $e_b = e_{tw}$.

$$\frac{\delta_{\mathrm{ML}} - \delta_{\mathrm{ML}}^{T+1}}{1-\delta_{\mathrm{ML}}} \left[W_{\mathrm{ML}}(\gamma(0), \boldsymbol{\tau^a}) - W_{\mathrm{ML}}(\gamma(e_{tw}), \boldsymbol{\tau^{tw}}) \right] \geq W_{\mathrm{ML}}(\gamma(e_{tw}), \tau^{tw}, \tau^{*a}) - W_{\mathrm{ML}}(\gamma(e_{tw}), \boldsymbol{\tau^a}) \tag{4}$$

    * Can we say anything about what τ^a must be?
    * Not sure if there is some τ^a that makes this equal. The left hand side is positive and largest when $\tau^a = 0$ and becomes negative and smallest when $\tau^a = \tau^{tw}$. The right hand side varies from positive to zero. I haven't tried very hard, but don't see a way to sign the total expression at $\tau^a = 0$