# Excluding the composition effects

- For the ad-valorem component, we estimate the following equation:

$$\ln(\widehat{\tau}_{ikt}) = \delta + \underbrace{\sum_{i \neq \text{AFG}} \alpha_i . \mathbb{1}_i}_{\ln(\widetilde{\tau}_i)} + \underbrace{\sum_{k \neq 011} \beta_k . \mathbb{1}_k}_{\ln(\widetilde{\tau}_k)} + \underbrace{\sum_{t \neq 1974} \gamma_t . \mathbb{1}_t}_{\text{Time trend}} + \epsilon_{ikt} \qquad (1)$$

  - With $\widehat{\tau}_{ikt} = \widehat{\tau}_{ikt}^{ice}, \widehat{\tau}_{ikt}^{adv}$ previously obtained

- For the additive component:

$$\ln(\widehat{t}_{ijt}) = \ln\left(\delta + \underbrace{\sum_{i \neq \text{ARG}} \alpha_i . \mathbb{1}_i}_{\widetilde{t}_i} + \underbrace{\sum_{k \neq 011} \beta_k . \mathbb{1}_k}_{\widetilde{t}_k}\right) + \underbrace{\sum_{t \neq 1974} \gamma_t . \mathbb{1}_t}_{\text{Time trend}} + \epsilon_{ijt} \qquad (2)$$

- Underlying rationale
  - Equations (1) and (2): Preserve our specification of the ad-valorem and the additive costs (Equation (**??**))
  - Equation (1) estimated using OLS, Equation (2) using non-linear least squares (by transport mode)