- $f(a) \equiv \sum_{i\in N} k_i \hat{p}_{i,a} + C_a$
- $t_i(\hat{u}) \equiv [f_{-i}(a^*_{-i}) - f_{-i}(a^*)]/k$
- (C1): $\forall i \in \mathbb{N}, U_{||} \subset U_i$ [All domains contain parallel domain]
- (C2): At least $n-1$ agents: $U_{||} \subsetneq U_i$ [(n-1) domains are larger than $U_{||}$]
- Build $\tilde{U}_i \equiv U_i \cap U_{||}$, $\tilde{\mathcal{U}}_i \equiv \prod_i \tilde{U}_i$
- Robert's thm to $\tilde{\mathcal{U}}_i$: $x(u) = \arg\max\limits_{a\in A} \sum_{i=1}^n k_i p_{i,a} + C_a$ for some k_i, C_a.
- If only one k_i nonzero, done [that i is dictator]
- Assume k_{i_1}, k_{i_2} nonzero. Allows (C2) to kick in: one of i_1, i_2 must be $U_{||} \subsetneq U_{i^*}$, $i^* \in \{i_1, i_2\}$.
- This $U_i\star$ cannot be modeled in terms of linear.
- This eventually leads to contradiction: Key idea is that non-linear space cannot be modeled by linear fn.
- (Technical: This will break *agent-maximising* property of DSIC).