Impact of contingent payments on systemic risk in financial networks

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$$\begin{aligned} V(x) = x + \Pi (V(x))^\top [\bar{p}(V(x)) - V(x)^-]^+ - \bar{p}(V(x)). \end{aligned}$$

We will prove continuity by utilizing the closed graph theorem (see, e.g., [2, Theorem 2.58]) noting that Proposition 3.6 provides us with the condition that the clearing wealths map into a compact set. Theorem 4 of [34] immediately provides the monotonicity of the clearing wealths.

Fix $x \in \mathbb{R}^{n+1}_+$ and let $\mathcal{X} = x + [-1,1]^{n+1}$ be a closed compact neighborhood of x in the full Euclidean space $\mathbb{R}^{n+1}$. Then we can define $V^x: \mathcal{X} \rightarrow \mathbb{R}^{n+1}$ as the restriction (and possible expansion to negative terms) of the domain of V to $\mathcal{X}$. The graph of V^x is given by:

$$\begin{aligned} \text{graph} V^x = \{(\hat{x}, \hat{V}) \in

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