There exists a collection of risky assets in portfolio $\mathcal{P}$. An oracle provides the current price $p_i \in \mathbb{R}_+$ for each asset $i \in \mathcal{P}$, and a binary action vector $a \in \{0, 1\}^P$ indicating whether each asset is available for investment ($a_i = 1$) or not ($a_i = 0$). The goal of the investment agent is to allocate a fixed budget B across these assets to **maximize the utility** of the portfolio, where the utility is directly informed by quantitative investor preferences measures.