Definition 3.1. *A blockchain protocol* $(\Pi, \mathsf{extract})$ *has (approximate)* fairness $T_0(\cdot), \delta$ in Γ environments, *if for all* Γ*-admissible* $(n(\cdot), \rho, \Delta(\cdot), A, Z)$, *every* $\phi \leq 1 - \rho$, *every* ϕ*-fraction subset selection* S, *there exists some negligible function* ϵ *such that for every* $\kappa \in \mathbb{N}$ *and every* $T \geq T_0(\kappa)$ *the following holds:*

$$\Pr\left[\mathsf{view} \leftarrow \mathsf{EXEC}^{(\Pi,\mathsf{extract})}(A, Z, \kappa) : \mathsf{quality}^{T,S}(\mathsf{view}, (1-\delta)\phi)) = 1\right] \geq 1 - \epsilon(\kappa)$$