Agents $h \in H$ can be heterogeneous with respect to their endowments, utilities and beliefs, generating demand for exchange between agents across different states in period 1. All trade in commodities occurs in competitive markets at a price vector p in $t = 0$ and respective price vector p_s in state s in $t = 1$.

In addition to physical commodities, agents trade financial contracts in period 0 in order to transfer consumption across states. However, other than in the standard Arrow-Debreu model, promises of future payments are not enforcable unless they are collateralized. A financial contract j is therefore characterized by the vector of commodities A_{js} it promises in state s in period 1 and by the vector of commodities C_j that have to be held by the seller as collateral between period 0 and 1. Given the non-enforcability, the value of the actual delivery of contract j in state s is given by

$$D_{js}(p_s) = \min \{p_s \cdot A_{js}, p_s \cdot f_s(C_j)\},$$

the value, at spot prices p_s, of the promise A_{js} or of the collateral $f_s(C_j)$, whichever is less. All financial contracts $j \in J$ are traded competitively in $t = 0$ at prices q_j but due to the collateral requirement it is important to distinguish between an agents contract purchases φ and his contract sales ψ. The set of available contracts J is exogenous but potentially very large and all contracts are in zero net supply.

The effect of the collateral requirement can most clearly be seen in an agent's budget constraints. Given prices (p, q) an agent chooses a vector of goods x and a portfolio of financial contracts (φ, ψ) subject to a budget and collateral constraint in $t = 0$ and a budget constrain for each state s in $t = 1$. The constraints in period 0 are

$$\underbrace{p_0 \cdot x_0 + q \cdot \varphi \leq p_0 \cdot e_0 + q \cdot \psi}_{\text{Budget constraint}} \quad \text{and} \quad \underbrace{x_0 \geq \sum_{j \in J} C_j \psi_j}_{\text{Collateral constraint}}.$$

The expenditure on goods x_0 and contract purchases φ cannot exceed the income from the endowment e_0 and contract sales ψ. In addition, the vector of goods x_0 has to cover the collateral requirements of the contract sales ψ. The budget constraint for state s in