A family of non-cocycle conjugate $E_0$-semigroups obtained from boundary weight doubles.

An $E_0$-semigroup $\alpha = \{\alpha_t\}_{t \geq 0}$ is a semigroup of unital $\ast$-endomorphisms of $B(H)$ which is weakly continuous in $t$. Previous work has shown how to induce $E_0$-semigroups of type $II_0$ using boundary weight doubles $(\phi, \nu)$, where $\phi : M_n(\mathbb{C}) \to M_n(\mathbb{C})$ is a unital $q$-positive map and $\nu$ is a type II Powers weight. We present cocycle conjugacy results for $E_0$-semigroups induced by $(\phi, \nu)$ and $(\psi, \eta)$ in the case that $\phi : M_n(\mathbb{C}) \to M_n(\mathbb{C})$ and $\psi : M_n'(\mathbb{C}) \to M_n'(\mathbb{C})$ both have rank one. In particular, we find that if $\nu$ is a type II Powers weight of the form $\nu(\sqrt{1 - \Lambda(1)} A \sqrt{1 - \Lambda(1)}) = (f, Af)$, then $(\phi, \nu)$ and $(\psi, \nu)$ induce cocycle conjugate $E_0$-semigroups if and only if $n = n'$ and $\phi$ is conjugate to $\psi$. (Received September 09, 2010)