The Farrell-Jones Conjecture predicts the structure of the algebraic K-theory $K(ZG)$ of the integral group ring of an arbitrary discrete group $G$. It asserts that a so-called assembly map (whose target is the spectrum $K(ZG)$ and whose source is the homotopy colimit of $K(ZH)$ over all virtually cyclic subgroups $H$ of $G$) is an equivalence. I will describe joint work with Wolfgang Lück, Holger Reich, and John Rognes, in which we prove partial injectivity results about the rationalized assembly map under finiteness assumptions on the group $G$, generalizing a theorem of Bökstedt-Hsiang-Madsen. The main tool is the cyclotomic trace map from algebraic K-theory to topological cyclic homology.