In this paper, a novel coaxial magnetic gear (MG) is proposed, in which both permanent magnet and consequent poles are employed on the inner and outer rotors. The MG is expected with improved torque transmission capability by increasing the effective magnetic flux and offering additional reluctance torque. Air-gap field distribution and torque-angle characteristic of this MG are analyzed and compared with the conventional MG, which adopts dual surface-mounted permanent magnet rotors. To maximize the torque density, several key design parameters are investigated using finite-element method. Analysis results indicate that the proposed MG with ferrite magnets can largely improve the pull-out torque. In addition, end effect and power losses with different rotor structures are analyzed. Performance of two optimized MGs is then validated with test. Also, the MG cost effectiveness with different magnet materials is presented.