In this paper we incorporate endogenous productivity growth a la Romer (1990) into a medium-scale new Keynesian dynamic stochastic general equilibrium (DSGE) model following Comin and Gertler (2006). We try to identify a growth component by using newly item, "intellectual property product", entered in 2008 SNA as regarded as R&D activity, and by incorporating the concept "time to build" by Kydland and Prescott (1982) into the converting time from an innovation to a product. And we also decompose GDP, consumption and investment in Japan into business cycles and growth components with common stochastic trend in terms of a Bayesian analysis. Finally, we show the growth accounting of GDP as well as historical decompositions of the three series for analyzing a role of R&D in the growth and the cycles.