What explains the location of industrial innovation? Economists have traditionally attempted to answer this question by studying firm-external knowledge spillovers. This paper shows that firm-internal linkages between production and R&D play an equally important role for the location of innovation. I estimate an R&D location choice model that predicts patents by a firm in a location from R&D productivity and costs. Focusing on large R&D-performing firms in the chemical industry, an average-sized plant raises the firm's R&D productivity in the MSA by about 2.5 times. The elasticity of R&D productivity with respect to the firm's production workers is almost as large as the elasticity with respect to total patents in the MSA, while proximity to academic R&D has no significant effect on R&D productivity in this sample. Other manufacturing industries exhibit similar results. My results cast doubt on the frequently-held view that a country can divest itself of manufacturing and specialize in innovation only.