

Taxation, Investment, and Firm Growth with Heterogeneous Capital

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Abstract

Capital heterogeneity has largely been ignored in studies of investment behavior. We estimate a dynamic structural model in which different types of capital are interrelated in both the production and adjustment cost technologies. Our results help explain some of the empirical failings of the neoclassical model. We show that when capital heterogeneity is ignored estimates of adjustment costs are biased upward, and estimates of factor substitution in production are biased downward. Our second principle result is that investment is not positively correlated with changes in internal net worth — as measured by cash flow — except when capital heterogeneity is restricted. Hence cash flow may matter in other studies not because it parameterizes a liquidity constraint, but because it is correlated with features of the technology that are ignored by assuming that capital is homogeneous. Our estimates suggest that different types of capital are significantly greater than unit elastic substitutes in production and complements in adjustment. We study the steady state and dynamic implications of these findings. In the steady state analysis, we highlight that in a model with multiple capital goods seemingly identical changes in the cost of capital lead to different investment responses. Regardless of the steady state effect of policy, in the dynamic analysis, investment in different types of capital will tend to be coordinated. Our simulations show that this complementarity in the technology of investment is an economically important magnification and propagation mechanism.

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