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Chapter XI

The Allocation of Complexity in Economic Systems[1]

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Abstract

This chapter isolates a classic allocation problem in the substitution relation between two primary carriers of complex rules—agents and institutions—as a function of the relative costs of embedding rules in these carriers, all subject to the constraint of maintaining overall system complexity. We call this generic model the allocation of complexity, which we propose as a bridge between neoclassical and complexity economics.

Introduction

The market economy is an excellent example of an intelligent complex adaptive system. Economists, however, have largely failed to develop theoretical frameworks based upon this insight and have instead persisted with a timeless equilibrium-based analysis. The exception to this has been the work of the Austrian economists (such as Friedrich Hayek) and evolutionary economists (such as Joseph Schumpeter). In this chapter, we propose a novel way of analyzing the complexity of self-organization in economic systems that draws upon the key model of the equilibrium-based neoclassical framework in terms of a comparative static framework for analysis of the allocation of rules between different classes of carrier. We start by *assuming complexity* (i.e., that evolutionary forces maintain complexity in open systems) and then analyze the distribution of state-space equilibria under different relative costs/prices of embedding rule-complexity in different carrier systems, such as agents or institutions.

The outcome is an *allocation of complexity*. Changes in relative prices, as caused by technological, institutional, or financial innovation, say, will effect the position of the equilibria in carrier-space. We may, therefore, study how change in the cost of embedding rules conditions the evolution of the complexity of an economic system. The upshot is a framework for arraying

Figure 1. The allocation of complexity model of rules in agents and institutional carriers as a function of the relative price of embedding isocomplexity