

Chapter 2

The Rule-Based Approach in the Analysis of Economic Change

Abstract While there exist a great many of important cues to the understanding of the phenomenon of entrepreneurship, these are scattered across time and the entire landscape of sub-disciplines in economics. Adding to these, insights from neighbouring disciplines also suggest a wide variety of factors affecting the propensity of agents to eventually become entrepreneurs. In order to integrate these factors into a consistent model, this chapter presents the rule-based approach (RBA) as an umbrella theory of socio-economic change. Centre stage in rule-based economics is *Homo sapiens oeconomicus* (HSO), a heterogeneous agent open to learning and with the capacity to adapt his decision logic to individual circumstances. HSO is a “rule maker and rule user”. We illustrate how the concept of rules and corresponding operations allows tracking the “life cycle” of an idea across the analytical levels of micro, meso and macro.

Although the rule-based approach of Dopfer and Potts has recently received increasing and most significant recognition (Oström and Basurto 2011), a brief introduction to its main elements is desirable at this point because it is fundamentally different from many received approaches in various respects as will become evident in the course of the following discussion.

The RBA takes its inspiration to a large extent from a desire to embrace the nature of economic change, and it can be presented as an answer to the theoretical void in explaining economic change. As we shall see, it offers a general analytical framework for the analysis of change in social systems.

2.1 Change as Reflected in Economic Thought

Economic change is most often publicly recognised when the macroeconomy takes an unexpected turn (compare Shackle 1979). Events such as the recent financial crisis spur public and scientific discussions on “how the rules of the game have changed”. But economic change is by no means restricted to the macro domain. Changing industry structures, technology diffusion, and lock-in phenomena are of equal importance. Moreover, researchers have gathered ample evidence of significant change in key areas of microeconomics. For instance, recent experimental studies in behavioural economics have identified considerable heterogeneity among agents with regard to the

motivations that drive their action. This points to a fundamental change in the views about the mindset of agents compared with the received *Homo oeconomicus*.

Observations of economic change such as those mentioned above have come to challenge the predominant theoretical apparatus of orthodox economics that continues to perpetuate its quest for universal and invariant laws. While orthodox theory provides satisfactory tools for the analysis of economic operations in stationary environments, its set of assumptions and restrictions precludes the analysis of economic change. Examples include the complete absence of entrepreneurial opportunities in an equilibrium economy (as noticed by Grebel et al. 2003), the predominance of rational choice as the only endogenous source of explanation or the disregard for explanatory variables such as institutions. Amendments to the neoclassical canon to meet these challenges have considerably complicated its formal apparatus, yet eventual improvements have failed to suffice for the analysis of economic change as it can be observed in real-world economies.

Discontent with this situation has led to the emergence of several heterodox branches within the discipline of economics. Among these, it is evolutionary economics that most explicitly concentrates on the nature of economic change. Since its inception in the early 1980s with the seminal work of Nelson and Winter (1982), scholars in evolutionary economics have sought ways to delve into the nature of economic change. Although its focus is on economic change, evolutionary economics has never excluded the realm of economic operations from its analysis. However, as the objects of analysis are entirely different—orthodox scholars investigating economic operations within a given system and the evolutionary community enquiring into the change of this very system—a proper theoretical concept embracing both objects is indispensable.

In recent years, heterodox economists have produced many important concepts of the different manifestations of economic change (Foster 1987; Loasby 1991; Witt 1993; Metcalfe 1998). Building on these, *The General Theory of Economic Evolution* (GTEE; Dopfer and Potts 2008) introduces the rule-based approach (RBA) as an analytical framework embracing most of the former and combining them into a consistent framework.

By virtue of its object, the reasoning implied by the RBA as the analytical core of GTEE necessarily differs from traditional economic theories. While the neoclassical canon aims to identify universal and invariable laws, GTEE opposes this view in two fundamental ways. First, it recognises heterogeneity among agents and across geographies, denying the universality of “economic laws” and endorsing “localist” approaches (Katzner 2002). Second, since the knowledge base of agents is never the same at two different points in time, it denies the invariability of economic laws and endorses the recognition of “historic time”. Ironically, one of the founding fathers of neoclassical economics once entertained quite similar views. In *Principles of Economics*, Alfred Marshall notes:

The term “law” means then nothing more than a general proposition or statement of tendencies, more or less certain, more or less definite. Many such statements are made in every science: but we do not, indeed we cannot, give to all of them a formal character and name them as laws.

(Marshall 1920 [1890]: I.III §4)

While Marshall only raises certain doubts as to the universality (“more or less certain”) and the invariability (“more or less definite”), GTEE clearly states the opposite: there are neither universal nor invariable economic laws. It argues that all Marshallian “tendencies” are ultimately subject to change. With the premises of heterogeneity and historic time in mind, it becomes evident that GTEE does not offer any lawlike statements on economic phenomena that could be likened to the “principles” of the neoclassical canon. GTEE represents a generalised theory of change in social systems.

For the researcher, GTEE offers the rule-based approach (RBA) as analytical device for deriving locally specific hypotheses suitable for testing in empirical investigations. Through the testing of such hypotheses, researchers will eventually be able to develop locally valid theorems by way of induction. In that sense, GTEE represents what computer scientists might call an open-source theory: it provides the RBA as a programming language. In contrast, the neoclassical canon may rather be likened to proprietary software as it largely precludes any amendments.

In this research, rule-based reasoning comes with three specific advantages. First, it helps to develop an understanding of entrepreneurship that allows us to assess and eventually accommodate existing theoretical views of the subject. Second, it introduces a much needed dynamic perspective enabling an analysis in “historic time”. And third, the construction of a locally valid model of entrepreneurship in Japan becomes feasible.

2.2 Building Blocks of the Rule-Based Approach

With important roots to be found in the work of Veblen, Nelson-Winter and Ostrom (see Blind 2016 for these linkages), the rule-based economics has evolved from within a spirited community of scholars of evolutionary economics. Its authors share many important insights from the recent discussion around “Universal Darwinism”, a discussion that has undoubtedly delivered an important element in the development of evolutionary theory for economics (Hodgson 1993; Aldrich and Hodgson 2008). However, Dopfer and Potts rightly note that “Universal Darwinism has made a systematic error in overlooking the human mind as an emergent carrier domain, leading it to an unrestricted view of replicators” (2008: 5). We observe that the concept of an agent functioning as a replicator bears a calamitous similarity to the conceived *Homo oeconomicus* in his limited capacity to apply but a single rule to his actions: rational choice.

In contrast, Dopfer acknowledges the creative mind of *Homo sapiens*, his intellectual heterogeneity and his capacity to discriminate the use of rules according to the context. Consequently, Dopfer has since introduced the notion of *Homo sapiens oeconomicus* (HSO) presented as a rule maker and rule user (2004) where rules serve as “organizing principles” (Steineck 2013:351). The concept of a rule-making and rule-using economic agent serves as a cornerstone for the subsequent *General*

Theory (Dopfer and Potts 2008). In the following, we introduce key elements of their rule-based approach: the distinction of rules versus operations; the analytical domains of micro, meso and macro; and the taxonomy of classes and orders of rules.

2.2.1 Rules Versus Operations

The starting point for any evolutionary economic analysis is human knowledge: it represents the space in which economic activity takes place. Acknowledging the fact that the total knowledge base of all agents is never the same at two different points in time, the RBA introduces a two-level, multidomain analytical concept. The two levels consist of a deep mode of rules and a material mode of operations executed based on rules. The distinction of these two levels allows for a constructivist worldview, in which the cognition of individuals represents the basis for their actions as follows:

1. Level of rules that determine the nature and quality of economic operations
2. Level of economic operations enquiring variables such as prices and quantities

When employed for the purposes of empirical research, it is important to note that the primary object of rule-based analysis is not economic operations (2), but the structure and change of rules on the basis of which economic operations are conducted (1). This distinction into a primary and a secondary focus does not imply a value judgement but simply reflects the insight that an analysis of operations needs to be based on an understanding of the underlying rules. For example, rules such as tariff exemptions in international trade do not directly translate into fully liberated trade operations (Chiavacci et al. 2012; Blind and Ziltener 2014). In this sense, the distinction does not imply a hierarchical but rather a sequential order.

2.2.2 Micro, Meso and Macro Domains

The focus of an analysis of rules on the deep level (1) depends on the respective analytical domain (Dopfer et al. 2004). Analytical domains include micro, meso and macro, which are not to be confused with micro and macro analysis in traditional economics (Dopfer and Potts 2008: 15–26). Contrary to received approaches, higher-level domains cannot be conceptualised by the aggregation of lower-level domains.

The micro domain addresses agents and agencies, that is, individuals and businesses, and enquires into the creation of new and the use of existing rules. The meso domain of rule populations—agents and agencies adopting a rule—looks into the diffusion of a rule into the public sphere. In turn, the macro domain analyses the interdependence and co-evolution of rules and their respective rule populations. Rule-based economics thus covers the following objects within its three domains:

1. Micro: Origination of a novel idea by an agent or by an agency, its eventual adoption as a rule; the agent as a rule carrier and locus of rule retention
2. Meso: The diffusion of a novel rule from one to many carriers; collective of adopters of rule a as population of rule a ; institutions as rule populations with meta-stable entry and exit rates of carriers
3. Macro coordination: Integration of the novel rule population (i.e. institution) into the deep structure of existing knowledge
 Macro dynamics: Auto-generating mechanism of novelty creation through interaction between rule populations

Evolutionary micro analysis enquires into the evolution of knowledge within agents and agencies as the carriers of knowledge. It does so by distinguishing three phases: origination (Micro 1), selective adoption (Micro 2) and retention (Micro 3). Analysis of the origination of novelty is not restricted to previously nonextant ideas. On the contrary, it also includes concepts that are new to participants in the relevant market (Blind 2003: 17). The embedding of new rules in agents or routinisation in agencies leads to the retention of a rule in a carrier (Dopfer and Potts 2008: 43).

Meso analysis starts when the first transmission of a rule from the original carrier to another agent or an agency takes place, i.e. when the formation of a rule population commences (Meso 1). Conceived as diffusion (Meso 2), the concept of a meso trajectory maps the development of a rule population in time. Origination in Meso 1 refers not to an invention (as in Micro 1) but to an innovation as the latter necessarily requires the involvement of multiple agents in a market. The diffusion process in Meso 2 can follow quite different patterns depending on the type of diffusion, for example, via peer-to-peer transmission or via mass media, and on the availability of support by vested interests, for example, venture capital in the case of technological innovation. When the rule population reaches a saturation level in Meso 3, it attains *institutional* status.

The macro domain enquires into the consequences that the emergence of a rule population and the eventual attainment of institutional status may have for the overall economic system. The domain is subdivided into two fields. First, macro coordination analysis deals with change in the structure of the economy-wide knowledge base caused by the integration of a new rule population. Second, macro dynamics analyses how such integration itself eventually triggers new novelty and how this overall process is reiterated. Although both fields actually analyse dynamic processes, there is an important difference, which can be captured by distinguishing “adaptation dynamics” and “auto-generating dynamics”.

When researching the effects of the emergence of a new rule population (a meso element) on the overall system of rules, the choice between a macro coordination analysis and an analysis of macro dynamics can be informed by looking into the effect exerted by the new rule population on associations between extant rules. If the emergence of the new rule population causes existing associations to vary by *intensity* only, the system is merely reacting and a macro coordination analysis will be sufficient. However, if existing associations vary by *quality* (i.e. breaking up or arising newly), the system has obviously evolved, which calls for a macro dynamic analysis.

2.2.3 *Classes and Orders of Rules*

In its most general reading, a rule represents a condition–action statement linking a condition to a specific outcome. Rules can be formulated in the form: “in order to . . . , do . . .”. To conceive rules in a consistent way, Dopfer and Potts propose a taxonomy of rule classes and orders (Dopfer and Potts 2008: 6–10) that allows for a wider notion of rules than earlier approaches (e.g. Hodgson 1997).

Dopfer and Potts propose *four classes of rules* grouped into the categories of subject rules and object rules. Subject rules relate to the thinking and behaviour of economic agents. When subject rules address the cognition (theories) of agents, they are referred to as “cognitive rules”; when addressing the behaviour of agents (patterns of conduct), Dopfer and Potts refer to them as “behavioural rules”. In contrast, object rules address the organisation of “things” including technical objects and humans alike. Object rules are referred to as “social rules” when governing the interaction of agents (the organisation of humans), while they are referred to as “technological rules” when addressing the arrangement of things.

To the distinction of rule classes, add *three orders of rules*. They help to understand the different ways in which rules are active in the economic system. At the centre of orders, 1st order operational rules provide the direct basis for operations (e.g. patents as technological rules for the operation of production) as well as for interactions (e.g. an auction rule as a cognitive rule for transactions).

In turn, rules controlling the overall functioning of an economy are designated 0th order constitutive rules. They represent the constituent basis on which all economic activity takes place and define the “opportunity space of permissible 1st order operations” (Dopfer and Potts 2008: 9). For example, law and legislation in a Hayekian reading (1973) represent a very important type of 0th order rules.

Finally, there are rules affecting the propensity to create, adopt and retain new rules, that is, to invent and to innovate in a social system. These are defined as 2nd order mechanism rules, where “mechanism” refers to the effect that 2nd order rules are having on other rules. Examples of 2nd order rules include aspects of the education system or a society’s tolerance of failure. Likewise, the phenomena analysed in Witt’s “learning to consume” (2001) can be understood in terms of 2nd order rules. In order to build a bridge to orthodox economics, the analysis of resources (such as capital or the present value of economic alternatives) corresponds to the study of operations conducted according to 1st order rules. Table 2.1 summarises the rule taxonomy.

It is instructive to compare this taxonomy with the empirically derived categories of rules in Oström and Basurto (2011: Table 2). “Boundary rules” and “payoff rules” closely correspond to 0th order constitutional rules, “choice rules” and “position rules” are a near equivalent to 1st order rules in the RBA, and the first “information rule” in Ostrom and Basurto could be conceived as a 2nd order rule (a rule pertaining to other rules). “Scope rules”, however, would not be considered “rules” in the RBA but as outcomes of operations conducted according to specific technical rules. More details on these analogies can be found in some earlier work (Blind 2016).

Table 2.1 Taxonomy for the rule-based approach

Classes of rules			
Subject rules		Object rules	
Cognitive	Behavioural	Social	Technical
Orders of rules			
0th order constitutive rules:	Social, legal, political, cultural and other constituent rules		
1st order operational rules:	Rules originated, adopted and retained for operations		
2nd order mechanism rules:	Rules for changing the way of origination, adoption and retention		

Source: Rearranged from Dopfer and Potts (2008: 8, 9)

Distinguishing orders of rules also demonstrates the need for a history-friendly approach. For example, changes in 0th order rules, such as relevant elements of a culture's value system, need to be traced back beyond the respective investigation period in order to account for possible time lags caused by slow diffusion processes. Similar considerations apply to 2nd order rules where these exert influences through an education system. For instance, it will take a generation for the consequences of conceiving of an entrepreneur negatively as an "exploiting capitalist" or positively as a "creative adventurer" to play out. What is more, the blend of 0th and 2nd order rules is culturally conditioned and, therefore, highly regionally specific. Only by taking into account this background can one fully grasp local specificities in economic life. For instance, in the case of Japan, it would otherwise be difficult to understand the origins of particular 1st order rules such as *LIFETIME EMPLOYMENT* or the *SENIORITY PRINCIPLE*.

References

- Aldrich HE, Hodgson GM (2008) In defence of generalized Darwinism. *J Evol Econ* 18:577–596
- Blind GD (2003) Statistical methods for a dynamic analysis of meso-trajectories in evolutionary systems. M.A. Thesis, St. Gallen University
- Blind G, Ziltener P (2014) Free trade live: insights from the Switzerland-Japan free trade and economic partnership agreement. In: Mottini R (ed) Yearbook 2014. Swiss Japanese Chamber of Commerce, Zurich, pp 53–63
- Blind GD (2016) Behavioral rules: Veblen, Nelson-Winter, Oström and beyond. In: Frantz R, Chen S-H, Dopfer K, Heukelom F, Mousavi S (eds) Routledge handbook of behavioral economics. Milton Park, Routledge, pp 139–151
- Chiavacci D, Blind G et al (2012) Ist das Freihandels- und wirtschaftliche Partnerschaftsabkommen (FHWPA) zwischen der Schweiz und Japan (bereits) eine Erfolgsgeschichte? Hauptergebnisse einer empirischen Analyse zu Umsetzung und Wirkung. *Asiat Stud* 66(1):19–56
- Dopfer K (2004) The economic agent as rule maker and rule user: Homo sapiens oeconomicus. *J Evol Econ* 14:177–195
- Dopfer K, Potts J (2008) The general theory of economic evolution. Routledge, London
- Dopfer K, Foster J et al (2004) Micro-meso-macro. *J Evol Econ* 14(3):263–279
- Foster J (1987) Evolutionary macroeconomics. Georg Allen Unwin, London

- Grebel T, Pyka A et al (2003) An evolutionary approach to the theory of entrepreneurship. *Ind Innov* 10(4):493–514
- Hayek FA (1973) *Law, legislation, and liberty: rules and order*. The University of Chicago Press, Chicago
- Hodgson GM (1993) *Economics and evolution: bringing life back into economics*. Polity Press, Cambridge
- Hodgson GM (1997) The ubiquity of habits and rules. *Camb J Econ* 21:663–684
- Katzner DW (2002) What are the questions. *J Post-Keynesian Econ* 25(1):51–68
- Loasby B (1991) *Equilibrium and evolution: an exploration of connecting principles in economics*. Manchester University Press, Manchester
- Marshall A (1920 [1890]) *Principles of economics*. Macmillan, London
- Metcalfe JS (1998) *Evolutionary economics and creative destruction*. Routledge, London
- Nelson R, Winter S (1982) *An evolutionary theory of economic change*. Harvard University Press, Cambridge
- Oström E, Basurto X (2011) Crafting analytical tools to study institutional change. *J Inst Econ* 7(3):317–343
- Shackle GLS (1979) *Imagination and the nature of choice*. Edinburgh University Press, Edinburgh
- Steineck C (2013) Truth, time, and the extended umwelt principle: conceptual limits and methodological constraints. In: Parker JA, Harris PA, Steineck C (eds) *Time: limits and constraints*. Brill, Leiden, Boston, pp 350–365
- Witt U (1993) *Evolutionary economics*. Edward Elgar, Aldershot
- Witt U (2001) Learning to consume – a theory of wants and the growth of demand. *J Evol Econ* 11(1):23–36

The Entrepreneur in Rule-Based Economics
Theory, Empirical Practice, and Policy Design
Blind, G.D.

2017, XX, 220 p. 21 illus., Hardcover

ISBN: 978-3-319-62778-6