1. "*Homo sapiens economicus*?" The evolutionary critique of the neoclassical economic man

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ABSTRACT

Purpose: The primary aim of this chapter is to examine the fundamental differences in the concept of the economic man as developed within two distinct schools of economic thought–neoclassical and evolutionary. Based on this comparison, the chapter seeks to identify the strengths and weaknesses of the evolutionary concept *homo sapiens economicus*, particularly in its critique of the neoclassical *homo economicus*.

Design/methodology/approach: This chapter is based on a literature review. It is structured into three main sections. The first section examines the role and significance of *homo economicus* within the neoclassical school of economics. The second section explores the conception of *homo sapiens economicus* developed within the evolutionary school, highlighting the key differences between the two models. The third section concludes with an evaluation of the strengths and weaknesses of the evolutionary concept of the economic man in comparison to the neoclassical framework.

Findings: This chapter highlights that evolutionary economics, despite its limitations in formalisation and prediction, provides a dynamic, context-sensitive alternative to the neoclassical model of *homo economicus*. It offers enhanced explanatory power for innovation, institutional change, and behavioural complexity. Additionally, the analysis further develops ongoing debate regarding the simplistic dichotomy between neoclassical and heterodox economics, arguing that modern mainstream economics is increasingly eclectic and adaptive (Colander, 2000). Critical insights once viewed as external to orthodoxy—such as bounded rationality or institutional embeddedness—are gradually being integrated into the evolving core of mainstream economic thought.

Originality and value: This chapter contributes to the ongoing debate about the microeconomic foundations of economic theory by systematically comparing two paradigmatic concepts of economic man. It synthesises interdisciplinary insights from evolutionary economics, behavioural science, and institutional theory to demonstrate the conceptual limitations of the neoclassical model and the explanatory potential of the evolutionary alternative. The work adds value by clarifying the theoretical and methodological implications of adopting *homo sapiens economicus* and by evaluating its

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applicability in understanding complex and dynamic economic phenomena, including innovation, crises, and institutional evolution.

Keywords: *homo economicus*, neoclassical school, *homo sapiens economicus*, evolutionary economics, microeconomic foundations of economics.

Introduction

Reflecting on the microeconomic foundations of economics remains a central element of contemporary economic research and debate. It encompasses numerous areas, including anthropological considerations within economics (Fiedor, Gorynia, & Szablewski; 2023b, Wilkin, 2016), paradigm shifts (Fiedor, Gorynia, & Mączyńska, 2023; Mączyńska & Sójka, 2017), and methodological reflections, particularly those concerning assumptions about human behaviour (Czernek & Marszałek, 2015; Dopfer, 2004; Lindenberg, 1990; Siebenhüner, 2000; Thaler, 2000). Throughout the development of economic thought, the neoclassical school has played a dominant role, relying heavily on the assumptions associated with the model of *homo economicus* (Dzionek-Kozłowska, 2018; Stępień & Szarzec, 2002, 2005, 2007). These assumptions form the core of mainstream economic theory and modelling. However, the neoclassical concept of man is subjected to growing criticism from heterodox schools of economics, which challenge its realism and applicability (Mäki, 2021; Urbina & Ruiz-Villaverde, 2019). One such critical perspective is offered by evolutionary economics. Drawing on insights from biology, psychology, and behavioural sciences, evolutionary economists propose an alternative conception of economic man: *homo sapiens economicus* (Dopfer, 2004). This concept seeks to provide a more realistic microeconomic foundation by emphasising bounded rationality, adaptive behaviour, and the evolutionary nature of decision-making processes.

The primary aim of this chapter is to present an evolutionary critique of the neoclassical *homo economicus* by examining both models. Based on this comparison, the chapter identifies the main strengths and weaknesses of the evolutionary concept, thereby contributing to a deeper understanding of the ongoing debates surrounding the microeconomic foundations of economics.

1.1. Neoclassical school and *homo economicus*

Orthodox economics, often referred to as the neoclassical school, has historically served as the dominant paradigm within economic thought. Its foundations lie in the works of classical economists such as Adam Smith, David Ricardo,

and John Stuart Mill, who sought to understand the dynamics of production, distribution, and value. However, it was during the marginalist revolution in the late 19th century that the neoclassical framework as it is known today took shape. Thinkers like William Stanley Jevons and Léon Walras introduced a new emphasis on marginal utility, seeking to formalise economic analysis through marginal calculus, thereby introducing precision and mathematical rigour into the study of human behaviour and markets (Stępień & Szarzec, 2007).[1]

The marginalist revolution marked a pivotal methodological shift. Unlike classical economists, who largely focused on objective theories of value, such as the labour theory of value, marginalists introduced the concept of subjective utility as the cornerstone of value determination. This intellectual transition reflected broader changes in the social sciences, emphasising individual choice as the fundamental unit of analysis. It set the stage for a deeper and more formalised reliance on rational, optimising behaviour as the central focus of economic inquiry. A pivotal development in the evolution of the neoclassical school came with the articulation of the model of *homo economicus*—economic man. This model became the cornerstone of neoclassical microeconomic theory. As Dzionek-Kozłowska (2018) elaborates, *homo economicus* was constructed as an abstraction: an idealised agent characterised by rationality, self-interest, and utility maximisation. This figure was not intended to mirror the full complexity of human behaviour but rather to serve as a simplified and methodologically useful tool for modelling and analysing economic phenomena.

The transition towards *homo economicus* reflected a deliberate methodological choice. By assuming that individuals behave in a consistent, predictable manner and aim to maximise utility (or profit, in the case of firms), economists could develop generalised theories and mathematical models capable of explaining and predicting market outcomes. This abstraction aligned with the broader goals of the emerging neoclassical school, which sought to model economy in a manner akin to the natural sciences, emphasising objectivity, universality, and formal deduction. The primary domain in which the marginalist revolution initially unfolded was the theory of value. Marginalist economists departed from the search for an objective measure of value and instead emphasised the subjective nature of value assessments made by individual economic actors (it is enough to mention that in older textbooks on the history of economic thought, this trend was referred to as the subjective-marginalist revolution).

The key assumptions underlying the neoclassical *homo economicus* model are as follows:

[1] While this kind of motivation can be attributed to Jevons and Walras, it is not valid in relation to Menger, who was also a significant representative of the marginalist revolution (Alter, 1982; Dzionek-Kozłowska, 2017).

1. Perfect rationality is assumed, meaning that individuals are believed to make decisions that maximise their utility by fully considering all available information and evaluating all possible options (Friedman, 1953).
2. Preferences are stable and well-defined, implying that economic agents possess preferences which are complete, transitive, and consistent over time, thereby ensuring predictability in decision-making (Mas-Colell et al., 1995; Robbins, 1932).
3. Self-interest is considered the primary driver of economic behaviour, with individuals motivated primarily by the pursuit of personal benefit, whether in the form of consumption satisfaction or monetary profit (Sen, 1977; Smith, 1977).
4. Behaviour is characterised by optimisation, whereby agents are assumed to engage in calculative reasoning to identify and select the most efficient means to achieve their objectives (Varian, 2010).
5. Decision-making is independent, such that each agent acts autonomously, unaffected by the preferences or actions of others, except insofar as they are reflected in market prices (Kirchgässner, 2008).

These assumptions enable economists to construct models that are internally coherent and mathematically tractable. Market equilibrium, welfare optimisation, and comparative statics are all built upon the foundational premise of individuals acting as *homo economicus*. This internal consistency became one of the principal strengths of neoclassical economics, allowing it to develop highly sophisticated theoretical tools. The model of *homo economicus* provided a powerful means of abstracting away from the complexities of real human behaviour. In doing so, it allowed economists to isolate key mechanisms of market functioning and price formation. General equilibrium theory, for example, relies heavily on the aggregation of individual optimising behaviours to demonstrate the existence of equilibrium states where supply equals demand across all markets. Similarly, welfare theorems presuppose that individual rational choices, when aggregated, lead to socially desirable outcomes under certain conditions. Nevertheless, as Dzionek-Kozłowska (2018) emphasises, while the model of *homo economicus* has undoubtedly provided analytical clarity and formal elegance, it has also attracted considerable criticism. Critics argue that the portrayal of individuals as perfectly rational utility-maximisers fails to capture the empirical realities of human behaviour, which are often shaped by bounded rationality, social influences, emotions, and cognitive biases.

Herbert Simon's (1957) notion of bounded rationality posed a significant challenge to the *homo economicus* model, suggesting that individuals operate under conditions of limited information and cognitive constraints, leading them

to *satisfice* rather than optimise. Behavioural economics, drawing on psychology, further exposed systematic deviations from rational choice, such as framing effects, loss aversion, and preference reversals. Moreover, the assumption of stable and well-defined preferences has come under scrutiny. Research has shown that preferences are often constructed in the process of decision-making and are influenced by context, framing, and social norms. The idea that individuals possess a fixed and coherent set of preferences, independent of their environment, appears increasingly untenable (Mäki, 2021; Stępień & Szarzec, 2007).

From a methodological perspective, the reliance on *homo economicus* has been criticised for promoting a form of instrumentalism. As Dzionek-Kozłowska (2018) points out, the neoclassical model often prioritises internal consistency and predictive power over descriptive realism. The model's abstraction from social, psychological, and institutional factors has been seen as a deliberate strategy to achieve analytical tractability, but at the cost of realism and explanatory depth. The normative implications of the *homo economicus* model are equally significant. By presenting self-interested utility maximisation as a universal and normative standard of rational behaviour, neoclassical economics implicitly legitimises certain forms of market behaviour and public policy. The model underpins much of the ideological commitment to free markets, limited government intervention, and the efficiency of competitive equilibria.

Despite these criticisms, the *homo economicus* model remains deeply embedded in orthodox economic theory. It continues to serve as a foundational assumption in numerous areas, including consumer theory, production theory, general equilibrium analysis, public choice theory, and models of market competition. Its resilience can be attributed not only to its analytical utility but also to its central role in structuring the theoretical architecture of mainstream economics. The persistence of the *homo economicus* model also reflects the institutional and educational structures of the economics profession. Textbooks, curricula, and professional training perpetuate the centrality of the rational agent model, embedding it deeply within the collective consciousness of economists. Moreover, the model's mathematical elegance and compatibility with formal modelling techniques make it highly attractive for academic research and policy analysis.

In conclusion, the neoclassical school of economics, through its adoption of the *homo economicus* model, provided a framework that allowed for the formalisation and systematisation of economic analysis. This abstraction, while powerful and analytically fruitful, inherently imposes limitations. The growing recognition of these limitations has spurred the development of alternative perspectives, such as evolutionary economics, behavioural economics, and institutional economics, which seek to offer a more nuanced, realistic, and dynamic understanding of human economic behaviour (Dobusch & Kapeller, 2012). Nevertheless, the

historical significance and ongoing influence of the *homo economicus* model cannot be overstated. It represents not merely a set of assumptions but a broader vision of human agency, rationality, and social organisation that has profoundly shaped the trajectory of economics as a science. Its continued dominance attests to its analytical power, but also highlights the need for ongoing critical reflection and theoretical innovation within the discipline.

1.2. Evolutionary economics and *homo sapiens economicus*

The critique of the neoclassical model of *homo economicus* and its underlying assumptions has led to the emergence of alternative approaches that aim to provide a more realistic and dynamic understanding of economic behaviour. One of the most significant of these is evolutionary economics, which draws on ideas from biology, psychology, and complexity science to change the way economic agents and processes are approached in economic science. Within this school of thought, the concept of *homo sapiens economicus* emerges as a more accurate and empirically grounded depiction of human behaviour (Dopfer, 2004).

Evolutionary economics challenges the static, optimisation-centred models of neoclassical economics. It emphasises that economic actors are embedded in changing environments, possess limited cognitive capacities, and adapt their behaviour through trial and error. As Foster (1997) and Hodgson (2007) argue, the economic world is characterised by perpetual novelty, uncertainty, and structural change—features that cannot be adequately captured by models that assume equilibrium and perfect rationality.

The model of *homo sapiens economicus*, as articulated by Dopfer (2004) and developed further by scholars such as Witt (2008) and Dopfer and Potts (2004), portrays the economic agent not as a timeless rational optimiser but as an adaptive, rule-making and rule-using organism. Rather than optimising a known objective function, the *homo sapiens economicus* continuously learns, revises, and creates behavioural rules in response to an evolving environment.

The core characteristics of *homo sapiens economicus* can be described as follows:

1. Bounded rationality characterises decision-making, meaning that individuals operate under cognitive limitations and, rather than optimising, rely on heuristics and satisficing strategies to cope with complex and uncertain environments (Gigerenzer, 2000; Simon, 1957).
2. Adaptive learning plays a central role, as economic actors continuously update their behaviour through mechanisms such as learning, imitation, exper-

imentation, and innovation in response to changing circumstances (Arthur, 1994; Nelson & Winter, 1985).
3. Rule governance defines behavioural patterns, where actions are guided by evolving routines, social norms, and institutionalised rules instead of being dictated by fixed and stable preferences (Hodgson, 2004).
4. Social embeddedness is a fundamental feature, reflecting the idea that individuals are situated within networks of relationships and institutional frameworks that shape their decisions and influence the broader dynamics of economic evolution (Granovetter, 1985; North, 1990; Ostrom, 1990).

This conception of economic behaviour necessitates a fundamentally different methodological approach. Evolutionary economists often employ models that emphasise path dependence, historical contingency, and non-equilibrium dynamics. Agent-based modelling and evolutionary game theory, for example, provide tools for understanding how heterogeneous agents interact and how macroeconomic patterns emerge from micro-level behaviours.

A notable contribution of evolutionary economics is its emphasis on dynamic processes of innovation and technological change as endogenous rather than exogenous forces within the economic system. As Nelson and Winter (1985) highlight, firms develop routines—stable patterns of behaviour—that guide production and decision-making. These routines evolve through processes of variation, selection, and retention, mirroring the mechanisms of biological evolution. Importantly, evolutionary economics offers a richer account of the formation and evolution of preferences themselves. Unlike the neoclassical assumption of stable preferences, evolutionary models recognise that preferences are influenced by cultural, institutional, and technological contexts and evolve over time in response to new experiences and information. Preferences are not static, but dynamic constructs shaped by interaction with an ever-changing environment.

It could also be argued that Karl Dopfer's concept of *homo sapiens economicus* is closely related to the idea of routines developed by Nelson and Winter (1985). In both frameworks, economic behaviour is conceived as an evolutionary process grounded in rules and patterns of action that emerge, become stabilised, and are modified through experience. In Dopfer's model, the economic agent is both a creator and a user of rules, whose rationality is embodied and cognitively bounded—a view that aligns closely with the understanding of routines as stable yet adaptable behavioural schemata. In this sense, *homo sapiens economicus* could be seen as an agent who, much like organisations in Nelson and Winter's evolutionary theory, learns, adapts, and transmits knowledge through recurrent practices that serve as conduits for economic evolution.

The broader methodological implications of evolutionary economics are significant. Rather than seeking universal, timeless laws of behaviour, evolutionary economics accepts historical specificity, institutional diversity, and contextual complexity as intrinsic features of economic life. This pluralism offers a more nuanced understanding of economic development, innovation, and structural change but also presents challenges for modelling and empirical testing. Critically, evolutionary economics moves away from the equilibrium-centred view of economic systems. Markets are not seen as self-correcting mechanisms tending toward equilibrium, but as evolving entities characterised by continuous adaptation, competition, and transformation. Economic success is not solely about efficiency in resource allocation but also about the capacity for innovation, adaptation, and learning. The concept of *homo sapiens economicus* thus redefines the very nature of rationality in economics. Rational behaviour is understood not as perfect optimisation but as context-dependent, heuristic-based adaptation. Economic actors operate under uncertainty, with incomplete information and evolving goals, using rules of thumb that are subject to revision as circumstances change.

It is also worth noting that *homo sapiens economicus* could correspond with the notion of ecological rationality proposed by Gigerenzer (2000). While Simon's concept of bounded rationality emphasises cognitive limitations, ecological rationality could be seen as an extension of this view, focusing on the adaptive fit between decision heuristics and environmental structures. In this sense, *homo sapiens economicus* could operate through fast-and-frugal heuristics that are not merely cognitive shortcuts but evolutionarily efficient strategies enabling satisfactory and context-sensitive decision-making under uncertainty. Consequently, rational behaviour could no longer be understood as a deviation from optimisation, but rather as an ecologically embedded form of adaptive intelligence.

Homo sapiens economicus is not without challenges. Critics point to the difficulty of formalising and predicting behaviour in a framework that embraces open-ended change and complexity. The absence of a unified theoretical core and the diversity of approaches within evolutionary economics also present obstacles to its broader adoption (Kwaśnicki, 1996).

Furthermore, evolutionary economics often invites criticism for its perceived lack of predictive precision compared to neoclassical models. While it offers rich descriptions of processes, it sometimes struggles to produce generalisable predictions that can inform policy with the same clarity and specificity as traditional models (Boulding, 1991). Nevertheless, evolutionary economics represents a powerful critique of the neoclassical paradigm and offers promising avenues for developing a more realistic and comprehensive understanding of economic behaviour. By grounding its conception of the economic agent in

empirical insights from cognitive science, sociology, and evolutionary biology, the *homo sapiens economicus* model moves economics closer to the complexities and dynamism of real-world economic activity.

Moreover, the evolutionary approach provides valuable insights into contemporary economic phenomena such as technological disruption, the diffusion of innovations, organisational change, and the co-evolution of markets and institutions. It offers a framework for understanding how economic systems adapt to crises, how new industries emerge, and how patterns of inequality and growth evolve over time (Glapiński, 2021). In this sense, the evolutionary paradigm has important implications for economic policy. It suggests that fostering innovation, supporting institutional diversity, encouraging learning processes, and building resilience are more effective strategies than relying solely on market-clearing mechanisms or static efficiency criteria.

In conclusion, *homo sapiens economicus* provides a dynamic alternative to the static and idealised *homo economicus* of neoclassical theory. It reflects a vision of economic agents as adaptive, socially embedded, and historically situated actors, navigating an ever-changing economic landscape through imperfect but evolving strategies. As evolutionary economics continues to develop, it holds some potential to reshape economic thinking in ways that are better attuned to the realities of human behaviour and societal change.

1.3. Strengths and weaknesses of the evolutionary concept

The preceding comparative analysis of *homo economicus* and *homo sapiens economicus* revealed fundamental conceptual and methodological differences between the neoclassical and evolutionary schools of economic thought. From this section's perspective, it is reasonable to explain that referring to the characteristics of evolutionary economics as a school of economic thought is supplementary in nature and forms the methodological basis of the evolutionary school, which corresponds to a focus on *homo sapiens economicus*. The evolutionary concept, grounded in bounded rationality, adaptive learning, and institutional embeddedness, proposes a richer and arguably more realistic view of economic behaviour. However, it also brings with it specific challenges related to precision, predictive capacity, and theoretical coherence. This section summarises the key strengths and weaknesses of the evolutionary concept of the economic agent in relation to its neoclassical counterpart.

On the basis of the analysis, the following strengths of evolutionary economics and *homo sapiens economicus* model can be identified:

1. The concept of *homo sapiens economicus* exhibits greater psychological and cognitive realism than its neoclassical counterpart. Instead of assuming perfect rationality, as in the case of *homo economicus*, the evolutionary model is based on the notion of bounded rationality, acknowledging that individuals rely on heuristics and simplified decision rules when operating under uncertainty and imperfect information.
2. Evolutionary economics offers a superior explanation of technological, institutional, and organisational change. Innovation and variability are treated as endogenous processes that drive economic evolution, in contrast to the neoclassical models, which typically treat innovation as an exogenous shock.
3. Unlike the atomistic actor of neoclassical theory, *homo sapiens economicus* is deeply embedded in social and institutional structures. Individuals' decisions are shaped by cultural norms, social networks, and institutional frameworks, leading to a more complex and realistic depiction of economic behaviour.
4. The evolutionary approach emphasises the path-dependent and historical nature of economic processes. Rather than focusing solely on equilibrium states, evolutionary economics analyses the sequence and irreversibility of economic developments, offering a richer understanding of economic transformation.
5. Evolutionary economics is characterised by high interdisciplinarity and methodological openness. By integrating insights from psychology, sociology, biology, and complexity science, it allows for the construction of more empirically grounded and diverse models of economic behaviour.

Despite its advantages, several weaknesses of evolutionary economics and its *homo sapiens economicus* model should also be acknowledged:

1. Evolutionary economics exhibits a lower degree of mathematical formalisation compared to neoclassical economics. The inherent complexity and openness of the processes it studies make it difficult to construct universally applicable and analytically precise models.
2. The predictive power of the evolutionary approach is relatively limited. While evolutionary models provide rich descriptions of processes, they are less capable of generating clear, testable predictions compared to neoclassical models, which often produce sharp equilibrium-based forecasts.
3. The absence of a unified theoretical core weakens the consolidation of evolutionary economics as a coherent research program. The diverse perspectives within evolutionary economics, such as neo-Schumpeterian, institutional, and agent-based approaches, make it difficult to establish a single shared methodology.

4. Many key concepts in evolutionary economics are difficult to operationalise and empirically verify. Terms such as "routines", "decision rules", and "adaptive contexts" often lack clear empirical definitions, which limits their application in quantitative research.
5. The impact of evolutionary economics on economic policymaking remains limited. Due to the lack of universal policy prescriptions and modelling challenges, evolutionary approaches have less influence in the sphere of public policy compared to neoclassical economics, which offers ready-made analytical and prescriptive tools.

Conclusions

This chapter has explored the conceptual foundations, theoretical implications, and methodological consequences of two distinct models of the economic actor: the neoclassical *homo economicus* and the evolutionary *homo sapiens economicus*. By situating these models within their respective schools of thought, it becomes clear that each reflects a different understanding of rationality, behaviour, and the role of institutions in economic life.

The neoclassical model, while elegant and analytically powerful, simplifies many empirically observed dimensions of human behaviour. It assumes that agents are perfectly rational, operate in isolation, and seek to maximise utility or profit based on fixed preferences and complete information. These assumptions have enabled the development of highly formalised models and policy recommendations, but at the cost of realism and behavioural plausibility. In contrast, the evolutionary model offers a more nuanced and empirically grounded framework. It emphasises bounded rationality, adaptive learning, historical path-dependence, and the embeddedness of individuals within institutional and social structures. Although this approach lacks the mathematical precision and predictive capacity of the neoclassical framework, it provides different explanatory depth for understanding complex, dynamic, and innovation-driven economic phenomena.

The chapter also presented a comparative summary of both models, highlighting key differences in rationality assumptions, the treatment of preferences, the role of social context, methodological approaches, and their applicability in policymaking. This comparison illustrates that evolutionary economics, despite its limitations, can provide valuable tools for analysing the evolving nature of markets, institutions, and agent behaviour in ways that the static assumptions of neoclassical economics cannot capture. Looking forward, the continued development of evolutionary economics will depend on its ability to address challenges

related to formalisation, empirical validation, and theoretical coherence. Nonetheless, in an era marked by systemic uncertainty, rapid technological change, and institutional flux, the evolutionary approach—anchored in the *homo sapiens economicus*—represents a promising and increasingly relevant alternative for modern economic analysis.

It is also important to acknowledge that understanding contemporary economics requires a more nuanced perspective than the binary critique of neoclassical versus heterodox schools may suggest. Neoclassical economics does not exhaust the scope of mainstream economics; rather, modern mainstream economic thought is increasingly eclectic and pluralistic in nature. As Colander et al. (2004) or Dobusch and Kapeller (2012) argue, many of the critical insights initially raised by heterodox approaches have already been recognised and, to varying degrees, incorporated into the evolving mainstream. In this light, the critique of neoclassical economics must be understood not as a rejection of an outdated orthodoxy, but as part of an ongoing dialogue within a dynamic and adaptive discipline.

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