

**Aleksander
Ostapiuk**

Wrocław University
of Economics and Business,
Poland

✉ aleksander.ostapiuk@gmail.com

The Unchanging Soul of Neoclassical Economics: Lakatosian Perspective on Becker's Economic Approach

Summary: The article aims to show that the paradigm in economics will not change significantly despite descriptive criticism because of axiomatic assumptions. To demonstrate this I analyze Becker's economic approach using Lakatos' methodology of scientific research programmes. I indicate the hard core (instrumental rationality, utility maximization, equilibrium), as well as the protective belt that makes the hard core immune from descriptive criticism. Because of its tautological nature, Becker's approach is considered a degenerative programme. This conclusion is extended to neoclassical economics where the tautologicality of rationality and utility leads to various problems. Ultimately, the immunization strategy hinders paradigm change in economics.

Keywords: Philosophy of economics, Neoclassical economics, Economic approach, Scientific research programme.

JEL: B10, B20, B40.

In recent years, there has been a discussion on the soul of neoclassical economics (NE). One camp argues that due to reverse imperialism and an empirical turn NE has changed (Colander 2000; Colander, Richard Holt, and Barkley Rosser Jr. 2004, 2011; John B. Davis 2006, 2008; Dani Rodrik 2015; Mario Cedrini and Magda Fontana 2018). The second camp argues that the changes are only adjustments and that the soul of economics has not changed (Christian Arnsperger and Yanis Varoufakis 2006; Leonhard Dobusch and Jakob Kapeller 2009; Sheila Dow 2012; Geoffrey M. Hodgson 2012; Kapeller 2013; Marion Fourcade, Etienne Ollion, and Yann Algan 2015; Yahya M. Madra 2016; Claudius Gräbner and Birte Strunk 2020; Robert Skidelsky 2020; Aleksander Ostapiuk 2021, 2022).

Although my position is closer to the second camp, my paper explains how both perspectives are possible. I show why, despite many changes, the NE paradigm has not changed. To explain this I analyze Becker's approach using the methodology of scientific research programmes (Imre Lakatos 1980). The conclusions from this analysis are extrapolated to explain how NE protects its "hard core" (instrumental rationality, utility maximization, equilibrium) from criticism by expanding the "protective belt".

One clarification is in order. The term NE is ambiguous (Colander 2000), however my goal is not to clarify the terminology. I have made things worse by identifying value-free economics with NE. The latter term is broader. However, value-freeness is a crucial feature of NE and is essential in my analysis. Both rely on revealed preference theory, where goals and motivations are not analyzed. It is assumed that individuals act in their best interest, and rationality is defined by technical criteria.

The paper's structure is as follows. Firstly, I analyze the foundations of value-free economics. Secondly, I analyze Becker's approach using the methodology of scientific research programmes (Lakatos 1980). I indicate the "hard core", "protective belt" and "negative heuristics", and conclude that Becker's approach is a degenerative programme. Thirdly, I show to what problems NE's axiomatic assumptions lead. Lastly, I analyze NE's immunization strategies toward new behavioral economics and new institutional economics in order to show NE's unchanging soul (hard core). I conclude that NE is a degenerative programme as the expansion of the protective belt leads to the tautologicality of NE's axioms.

1. The Philosophical Roots of Value-Free Economics

To begin with, I must underline that I do not aim to present a full historical account and my analysis focuses on one feature of NE: value-freeness. Thus, my analysis is superficial and does not depict various historical controversies and discussions concerning NE (for more see, Philip Mirowski 1991; Mark Blaug 1997; Yuval P. Yonay 1998; Hodgson 2001, 2004; Keith Tribe 2021).

Logical positivism is one of the most significant factors shaping value-free economics. It had an impact on Robbins, one of the fathers of NE. Amos Witztum (2007, p. 58) indicates the three main principles of Robbins' famous essay: (1) the subject matter of economics is the tension between scarcity and wants; (2) economics is built upon axioms inferred from experience; (3) economics does not deal with ends but with means. Therefore, it is value-free.

The most important issue from the perspective of this article is the concept of value-freeness, which created a chasm between the positive and normative approaches that exists in economics to this day (Hendrik P. Van Dalen 2019). Before analyzing Robbins, I will scrutinize how logical positivism classifies sentences so as to comprehend the positive-normative dichotomy. Logical positivists categorize three different kinds of sentences: (1) synthetic; (2) analytic; (3) nonsense (Hilary Putnam 2002). Synthetic sentences are falsifiable and empirically verifiable. Facts about reality can verify these statements, e.g., the claim that Lake Baikal is the deepest lake in the world. We can verify if this statement is true. Analytical statements are tautologies and it is impossible to verify them through reality; their truth or falsehood is based on logical rules alone, e.g., the sum of angles in a quadrangle is 360° . The third class of sentences includes ethical, aesthetic and metaphysical judgments. In logical positivism these are perceived as unscientific because we cannot verify them. Logical analysis proves that we cannot derive any knowledge about future experiences from the sentences used in ethics, e.g., "killing is wrong". Thus, this sentence is meaningless (Rudolf Carnap 1935, p. 24). In general, logical positivism perceives any value statement as nonsensical.

Prior to logical positivism there was the division between positive and normative economics made by J. N. Keynes. The distinction between positive and normative was part of Keynes' general distinction between positive and normative science, and art. Positive science analyzes facts (what is), normative science analyzes rules and norms (what ought to be), and art deals with policy implementation (what can be achieved) (John Neville Keynes 1891; Phyllis Deane 1983). At the beginning, the difference between normative and positive was acute but economists did not undermine normative approaches. They believed that ethics was indispensable, but did not have to deal with it because they had to specialize. Until the 1920s, the majority of economists perceived the relationship between ethics and economics as hierarchical. Economics was interested in wealth, while ethics analyzed the insights from the social sciences to judge which actions were ethically desirable (Andrew M. Yuengert 2000). Although specialization was important, Robbins work gave rise to the dichotomy between normative and positive economics. He was persuaded by logical positivists who argue that ethical statements express only emotional attitudes. Robbins stressed the discrepancy between economics and ethics: "Economics deals with ascertainable facts; ethics with valuations and obligations. The two fields of inquiry are not on the same plane of discourse" (Lionel Robbins 1932, p. 148). As a result of logical positivism, every value judgment was put into a bag of nonsense that cannot be discussed. Due to these problems, Robbins differentiated ethics from economics and claimed that "economic analysis is *wertfrei* (value-free)" (Robbins 1932, p. 91).

The second main reason behind formulating value-free economics is the process of economics leaving psychology around the year 1900 (Pareto turn). Many scholars (e.g., Luigino Bruni and Robert Sugden 2007) have written about this process. Therefore, in this paper only the crucial factors are analyzed. Initially, marginalists appreciated cardinal utility, but they did not find a persuasive method of measuring utility, which attracted criticism (Robbins 1932, p. 83). Psychological hedonism lost credence and marginalists had to revise its theoretical foundations. The cardinal utility approach, in which utility can be assessed, was a lost cause. Therefore, economists switched to the ordinal utility approach in which consumers only rank their preferences. The failure to measure utility also resulted in avoidance of a discussion on human goals. It was thought that happiness was too elusive. The escape from psychology ended with Samuelson and revealed preference theory.

Samuelson was enchanted by the clarity of mathematical language. Logical positivism had the biggest impact in shaping this view. Around the same time, Carnap published *Logical Syntax of Language* (Carnap 1937) the aim of which was to supply science with metalanguage. Logical positivists chose the language of mathematics due to its precision and clarity. Paul A. Samuelson (1938), following logical positivists, sought to ground the theory of consumer choice on an observable basis. However, his goal was not to reveal preferences but to create an operational consumer choice theory where neither utility nor preference matter. Samuelson's goal was not to explain why individuals choose something; instead he wanted to depict the world. Samuelson based his theory on observable choices because, as scientists, we cannot observe preferences. The main idea behind revealed preference theory is: if one picks option A instead of alternative B, A is revealed to be preferred to B. Choices are consistent if they meet

the “weak axiom of revealed preference” (WARP). When choices fulfil the consistency conditions, economists can build transitive, complete and continuous revealed preferences (Amartya Sen 1973).

From our perspective, the most critical feature of revealed preference theory is its notion of rationality, in which people are rational if they follow WARP. Rationality is instrumental because economists are not interested in people’s motivations. Neo-classical economists are solely focused on the results of a certain behaviour, not on the reasons behind it. They assume that agents always maximize their utility and are rational. Samuelson had an enormous influence on neoclassical economists, who perceive rationality instrumentally, do not care about motivations, and axiomatically assume that choices reveal preferences. The axiomatic revealed preference theory works because economists assume that people are rational if they meet the technical conditions. Thanks to this axiomatic system, economists started perceiving economics as an objective science.

I must indicate two more economists whose ideas have led to economics being perceived as a positive science. The first of them is Friedman. For him, prediction is essential. A novel fact, evidence which has never been detected before, dictates whether an economic theory is successful or not. Friedman writes, “The ultimate goal of a positive science is the development of a ‘theory’ or ‘hypothesis’ that yields valid and meaningful (i.e., not truistic) predictions about phenomena not yet observed” (Milton Friedman 1953, p. 7). Many economists perceive Friedman as an instrumentalist because he did not think that we need to use realistic assumptions (Lawrence Boland 1979; Bruce Caldwell 1982). However, Uskali Mäki (2009b) argues that Friedman’s position is more complicated and cannot be identified as instrumentalism. In general, due to its ambiguities, Friedman’s “F53” (1953) is open to various interpretations (Paul Hoyningen-Huene 2021). Despite various and conflicting interpretations in the philosophical literature, economists commonly perceive Friedman as an instrumentalist for whom realism is not important. In Friedman’s opinion, “the relevant question to ask about the ‘assumptions’ of a theory is not whether they are descriptively ‘realistic,’ for they never are, but whether they are sufficiently good approximations for the purpose in hand” (Friedman 1953, p. 15) and “in general, the more significant the theory, the more unrealistic the assumptions” (Friedman 1953, p. 14). Friedman uses simplifying assumptions (as if) because thanks to them the predictive power is higher.

The second influential figure was Popper and his falsificationism. Falsificationism had two goals. The first is demarcation: how to distinguish science from non-science. The second goal is methodological: how science ought to be conducted (D. Wade Hands 1993). Karl Popper (1959) criticizes logical positivism because of its inductive method. Therefore, it seems strange that economists so readily started to use falsificationism. The infatuation with falsificationism was possible because many economists did not fully understand it. There are two central problems with falsificationism in economics. Firstly, most economists had never implemented this approach. Blaug writes that “Modern economists frequently preach falsificationism... but they rarely practice it” (Blaug 1992, p. 111). Obviously, economists conduct empirical research that ought to make economic theories more exposed to falsification. However, “much of it is like playing tennis with the net down: instead of attempting to refute testable

predictions, modern economists all too frequently are satisfied to demonstrate that the real world conforms to their predictions” (Blaug 1992, p. 241). Therefore, in Blaug’s opinion, economists verify their theories rather than falsify them, which demonstrates the enduring impact of logical positivism on economists. The complications regarding falsificationism go further. Some economists do not know about theory-ladenness and underdetermination (empirical tests are not definite because no theory is tested in isolation, Willard V. Quine 1951). They perceive falsificationism as a particular kind of empiricist foundationalism (logical positivism) but lacking the problem of induction. As Popper was not an empirical foundationalist, these economists are Popperians for flawed motives (Hands 2001). Secondly, if they had read Popper as philosophers of science do, they would not have become Popperians because falsificationism does not present a methodology which shows how science must be conducted. Falsificationism does not institute an inflexible demarcation line between pseudo-science and science. Ultimately, it is impossible to escape from metaphysics (Thomas S. Kuhn 1970; Paul Feyerabend 1975; Lakatos 1980).

Following both Popper and Friedman demonstrates economics’ schizophrenia. On the one hand, neoclassical economists behave as naive realists who believe in logical positivism and objective data. On the other hand, economists rely on instrumentalism where prediction matters because truth cannot be discovered. This inconsistency seems to result from economists’ insufficient methodological knowledge and opportunism. Economists choose methodologies that suit their purposes. Objective data provides them with a solid base that differentiates economics from other social sciences. Contrastingly, instrumentalism, with its distrust in truth, provides economists with a rationalization for the simplified mathematical models that are not expected to explain real life. It is enough if they have predictive power.

I end my analysis of value-free economics with the socio-historical context. The 1950s were a time of the “formalist revolution” in economics (Blaug 2003). In a short time, a simplified and mathematicized perception of reality became the dominant view in economics. After the Second World War more economic publications used mathematics, which owes its popularity to its simplicity, effectiveness and objectivity (Mirowski 1991, 2002; E. Roy Weintraub 2002; Sandye Gloria-Palermo 2010). The mathematization of economics established the view that economics is almost as “hard” as the natural sciences and is far from the “soft” social sciences. In this perspective, economic laws are like natural laws, which are objective, independent of history and social reality, and can be known through experience. Moreover, value-free economics pursues a natural ideal of a scientific method which is axiomatically neutral. This methodology has led to economic imperialism in which economists explain topics traditionally analyzed by other social sciences (Edward P. Lazear 2000; Mäki 2009a; Mäki, Adrian Walsh, and Manuela Fernández Pinto 2017).

2. Becker’s Economic Approach as a Scientific Research Programme

We now move on to the paper’s main aim, the analysis of Becker’s approach using the methodology of scientific research programmes (MSRP, Lakatos 1980). Thanks to this framework I will analyze the central assumptions of neoclassical economics which

enable economics to absorb descriptive criticism and leave the paradigm mostly unchanged.

Lakatos' essential idea is that the unit of scientific achievement is not a single hypothesis but a scientific research programme (SRP). It contains (1) the hard core, (2) the protective belt, and (3/4) positive/negative heuristics. "Hard core" includes the foundational metaphysical assumptions of SRP. It is a framework of overall hypotheses whose components are irrefutable by any empirical evidence. The "hard core" stays the same despite the programme's evolution because the dismissal of the hard core leads to the rejection of the research programme. (2) The "protective belt" consists of auxiliary hypotheses, empirical conventions, and other theoretical formations of the programme that can be falsified. Here, changes take place as the programme moves over time. The "protective belt" is a buffer zone between empirical evidence and the hard core. It changes in accordance with the modifications in empirical evidence (Hands 2001, p. 122). (3/4) Positive and negative heuristics show what scientists should (positive) and should not (negative) search for during the programme's progression. Heuristics form a set of accepted methodological rules (Lakatos 1980). The "positive heuristic" is "set of suggestion or hints" that help modify components of the protective belt (Lakatos 1980, p. 50). The "negative heuristic" directs criticism regarding inadequacy or falsity towards the protective belt, making the "hard core" irrefutable. Most changes in SRP occur in the protective belt. Scientific revolution takes place when the hard core is replaced. Lakatos argues that scientific progress occurs when a degenerating SRP is traded for a progressive one that enables scientists to discover a novel phenomenon.

At the beginning of the 1970s MSRP was popular among economists interested in methodology because Lakatos addressed problematic issues that Popper (1959) did not address. This was observable in fields where the tension between falsificationism and real economic practice existed. This issue was identified by Blaug who writes, "the central weakness of modern economics is, indeed, the reluctance to produce theories that yield unambiguously refutable implications" (Blaug 1992, p. 238). Obviously, the different theories used by neoclassical economists contain hard cores which define their SRP (Hands 1993). However, MSRP did not suit economics as well as initially believed. The decline in Lakatos' influence on economists began at the Capri conference in 1989 (Wenceslao J. Gonzalez 2014), attended by many scholars interested in economic methodology (e.g., Backhouse, Blaug, Caldwell, Hands, Hoover, Mäki, de Marchi, Mirowski, Weintraub). The outcome of the Capri conference was a book predominately negative toward Lakatos (Neil de Marchi and Blaug 1991). From that time on, Lakatos lost popularity among philosophers of economics (Daniel M. Hausman 1992; Hands 1993; Roger E. Backhouse 1994). Why did this take place? I must underline that this paper's aim is not to analyze the general state of science with its limitations. Therefore, I constrain myself to two objections toward Lakatos' methodology that are essential from the perspective of this paper. Firstly, it is unfeasible to find a hard core of any SRP in economics that everybody would recognize (see a critical analysis of the "neo-Walrasian research programme", by Hausman 1992). Secondly, the measurement of scientific progress by empirical criterion (predicting novel facts) is incompatible with economics as it lacks experiments for prediction (Hands

1984, 1990; de Marchi and Blaug 1991). This argument is essential because Lakatos argues that predicting novel facts enables scientists to compare scientific programmes and decide which of them is better.

Although MSRP cannot indicate the hard core with certainty or help us decide which scientific programme is better, it can be a useful framework for scientists. In spite of the criticism, some economists continued to apply MSRP in various fields (Hands 2001, pp. 299-300; Stavros A. Drakopoulos and Anastassios D. Karayiannis 2005; Michal Brzezinski and Michal Dzielinski 2009; Ingrid H. Kvangraven 2021). MSRP is still used because it enables economists to recognize the structure of different programmes. The identification of the hard core, protective belt, and heuristics help scientists to reflect on various programmes. Moreover, thinking in categories of deterioration or progress helps in assessing whether a particular programme is useful.

MSRP can be especially beneficial when it is employed to analyze Becker's economic approach. Despite being identified with "the standard" and "mainstream" economics (Hands 2001, p. 271), Becker had not been thoroughly analyzed in the methodological literature. The exception is "economic imperialism" (Lazear 2000; Mäki 2009a; Mäki, Walsh, and Fernández Pinto 2017). However, Becker's approach has not been thoroughly analyzed by MSRP, which is quite startling because his approach fits into MSRP. It has a few axioms from which the relevant predictions concerning individuals' behaviours are deduced. Becker writes, "The combined assumptions of maximizing behavior, market equilibrium, and stable preferences, used relentlessly and unflinchingly, form the heart of the economic approach as I see it" (Garry S. Becker 1976, p. 5). Becker claims that "the economic approach provides a valuable unified framework for understanding all human behavior" (Becker 1976, p. 14). However, understanding in Becker's approach is not common-sense understanding. George J. Stigler and Becker (1977) argue that the economic approach should be assessed by its predictive power, not by the descriptive realism of its explanations and assumptions. This fits into MSRP, where the hard core includes assumptions that do not need to mirror reality.

As indicated before, the economic approach can to some degree be seen as the embodiment of neoclassical economics. Becker was influenced by two economists who support NE, Robbins and Friedman. For Becker as for Friedman, understanding behavior stands for the ability to predict. Robbins also strongly influenced Becker as both think that economics can and ought to be value-free. Thus, economics must not assess goals or decide for people which goals are worth pursuing. Secondly, like Robbins, Becker founded his approach on scarcity. Individuals always need to choose because time is in short supply. As a consequence, economics tackles every human choice (childbearing, love, religion and so on). It was for his imperialism that Becker was awarded the Nobel Memorial Prize. The prize was awarded for "having extended the domain of economic theory to aspects of human behaviour which had previously been dealt with – if at all – by other social science disciplines such as sociology, demography, and criminology" (Royal Swedish Academy of Sciences 1993, p. 1). Becker's economic approach had an enormous influence on other social sciences due to the hard core assumptions of his approach. These axioms and a belief in being a positive science give economics the dominant role among the social sciences.

2.1 Becker's Economic Approach: The Hard Core with the Protective Belt

This paper indicates the hard core with three fundamental assumptions: (1) utility maximization; (2) instrumental rationality; (3) equilibrium. As was mentioned earlier, Becker indicates the hard core by writing “the combined assumptions of maximizing behavior, market equilibrium, and stable preferences, used relentlessly and unflinchingly, form the heart of the economic approach as I see it” (Becker 1976, p. 5). The incompatibility between Becker's hard core assumptions and the assumptions proposed in this paper is possible because of the problem with establishing unified hard cores (de Marchi and Blaug 1991). Therefore, my hard core is open for discussion.

Before analyzing the assumption behind each hard core, more explanation is needed. In this paper, I focus on microeconomics and *homo economicus*, which play an essential role in the context of NE as they are responsible for economics imperialism. Thus, in my analysis I focus on utility maximization and instrumental rationality. Moreover, I analyze equilibrium from a microeconomics perspective.

The second assumption, stable preferences, is perceived as a negative heuristic. Becker's third assumption, maximizing behavior, is subdivided into instrumental rationality and utility maximization despite the fact that Becker equates both with one another. He writes, “by ‘behaving rationally’, I mean ‘maximizing’ consistent behavior that looks forward and tries to anticipate as far as possible what the future will bring. This is common to all versions of rational choice that I know of” (Becker as cited in Richard Swedberg 1990, p. 40). In the literature, utility maximization and instrumental rationality are often used interchangeably. However, they focus on slightly different aspects which can lead to some misunderstandings. Analyzing utility independently from rationality is necessary to better understand Becker's approach. Firstly, the distinction underlines the role of utilitarian and consequential thinking in the economic approach. Secondly, I delineate instrumental rationality due to the fact that there are many interpretations of rational choice theory and economic rationality (see Michel Zouboulakis 2014; Catherine Herfeld 2021).

The main aim of analyzing Becker's approach using MSRP is to show how, due to the protective belt, his approach absorbs every descriptive criticism aimed at the hard core.

(1) Utility maximization. Becker was open about his reliance on utilitarianism and Bentham. For Becker, it was important that people always seek to maximize their utility. He claims that “Everyone recognizes that the economic approach assumes maximizing behavior more explicitly and extensively than any other discipline, be it the utility or wealth function of the household, firm, union, or government bureau that is maximized” (Becker 1976, p. 5). For Becker, more significant than utility measurement was the notion of utility itself. He perceives utility *ad libitum* where it could mean everything. In this way, Becker responded to two various types of criticism directed toward *homo economicus*.

Firstly, Becker incorporates altruistic behaviors in the process of maximization. From its inception, NE had been blamed for describing people as selfish beings. The adversaries of *homo economicus* question why individuals give tips in a roadside bar or donate their organs to strangers. NE had to expand the notion of self-interest to explain these anomalies. The answer is that people help others because it increases

their utility. According to Becker, if people give their kidneys to strangers, it is only because it gives them utility. The same logic is applied to analyze love in the family (Becker 1981). Becker did not equate utility maximization with self-interest, and he understands that individuals have various motivations (e.g., envy and love). He argues that “individuals maximize welfare as they conceive it, whether they be selfish, altruistic, loyal, spiteful, or masochistic” (Becker 1993, p. 386). However, his approach does not note the difference between motivations and only states that people maximize their utility. This relativistic perception means that utility has become a “black box” that contains everything. It does not matter if individuals are egoists or altruists because utility is always maximized (Sen 1977).

Secondly, the expanded concept of utility means that neoclassical economists cannot determine any ultimate values. It is impossible to compare utility between people and between any choices made by a particular person. Becker supported value-free economics with the ordinal utility approach. Moreover, his approach is based on consequentialism in which no goods have intrinsic value. Choice is the only thing that matters and when one chooses something, one maximizes one's utility. Viewing utility *ad libitum* constructs a protective belt. It is evident that individuals do not always maximize their utility (e.g., 1. driving after drinking 2. behaving altruistically). These choices are anomalies that threaten the hard core because it is assumed that people always maximize their utility. By viewing utility *ad libitum*, the hard core is saved from anomalies because it is unfeasible for people not to maximize utility. The unfalsifiability of utility maximization is well-known (Sen 1977; Boland 1981; Hodgson 2012).

(2) Instrumental rationality. Chiefly due to the formalist revolution, neoclassical economists regarded individuals as hyper-rational agents who evaluate an endless amount of information and choose behavior that maximizes their utility. However, perfect rationality became the target of criticism, which escalated after behavioral economics became popular around the 1980s (Richard Thaler 2015). Today, neoclassical economics does not rely on perfect but instrumental rationality. Becker uses this version of rationality to guard the economic approach's hard core. Obviously, individuals do not assess all information and choose the best options. Quite often, people behave irrationally. Neoclassical economists have two main tactics for tackling these anomalies.

Firstly, they argue that individuals would make ideally rational decisions if it were not for constraints such as limited cognitive powers or limited time. Occasionally, economists assert that perfect rationality can be irrational, e.g., when the costs of processing and acquiring information are too high. Knight writes, “It is evident that the rational thing to do is to be irrational, where deliberation and estimation cost more than they are worth” (Frank H. Knight 1921, p. 67). Nowadays, heuristics - the simple rules used to form judgments - are not perceived as irrational because individuals do not have sufficient time to compute every piece of information. If individuals had to ponder on every action, it would not be possible to live. This is one of the conclusions of Daniel Kahneman (2011). He argues that a fast “system 1” is more predisposed to mistakes than a deliberate “system 2”. However, both systems are interconnected and we cannot depend solely on “system 2” because we need to make prompt decisions

most of the time. The best-known economist that questioned perfect rationality was H. Simon, who claimed that people are “satisficing” not maximizing (Herbert A. Simon 1957). Individuals are not utility maximizers but make satisfactory decisions because of “bounded rationality”. We do not have sufficient time to absorb every piece of information and our cognitive potential is limited. Nevertheless, bounded rationality does not need to be perceived as a rebuttal of *homo economicus*. It does not repudiate the hard core because rationality is bounded in the economic approach. Becker writes, “Actions are constrained by income, time, imperfect memory and calculating capacities, and other limited resources, and also by the opportunities available” (Becker 1993, p. 386). These constraints create the protective belt. Irrational choices do not question the hard core assumption regarding rationality because instrumental rationality is always limited.

The second tactic used to deal with irrational behaviors is to change the perception of rationality. Generally, rationality is identified with a wise choice. However, economists want to be value-free and they do not discuss goals. They assume that it is not possible to determine what individuals should want. Therefore, economists only verify whether individuals satisfy their preferences efficiently. Hume presented the best-known characterization of instrumental rationality. He wrote, “Reason alone can never be a motive to any action of the will” and “reason is, and ought only to be the slave of the passions” (David Hume 1896, pp. 282-283). Neoclassical economists treat this characterization seriously. For them, rationality is about the process, not the outputs. They are not concerned with individuals’ choices, but whether the process of choosing fulfils both requirements: transitivity and completeness. From this perspective, alcoholics are rational when they buy the next bottle of gin because they follow their preferences.

(3) Equilibrium. The third hard core assumption, equilibrium, differs from utility maximization and instrumental rationality because these are parts of rational choice theory which focuses on individuals. Equilibrium is different because the focus is not only on individuals but also on the macro-level. Thus, I have to specify my analysis of Becker. Firstly, this analysis does not involve discussion on proving equilibrium because Becker uses equilibrium as a framework to find empirical predictions. Secondly, my analysis does not involve macroeconomics and DSGE models as Becker did not participate in that discussion. I analyze equilibrium from Becker’s perspective as a framework for analyzing interactions in non-traditional economics markets (family, crime, human capital and discrimination).

Becker’s equilibrium emerges from the sum of individual decisions. Thus, I analyze equilibrium as a hard core that results from two hard core assumptions (1. utility maximization, 2. instrumental rationality). Ultimately, macro-level equilibrium results from the decisions of rational individuals that maximize their utility. During my analysis I underline the difference between the micro and macro-level. This will help in understanding how individuals’ decisions lead to macro-level consequences.

My analysis focuses on Human Capital Theory (Becker 1994) because it exemplifies Becker’s economic approach in the context of equilibrium, and this framework was later used in the context of family and crime.

On the micro-level, Human Capital Theory (HCT) assumes that rational individuals make a cost-benefit analysis to decide if it is worth obtaining more education. The costs of education are time and money; the benefits are better-paid jobs in the future. In HCT, people are rational and will invest in education as long as the marginal benefits (better-paid job) exceed or equal the marginal costs (time and money spent on education). The individual's optimization strategy leads to equilibrium on the macro level. In a well-functioning labor market, human capital investment aggregates to a stable wage structure where supply and demand for skilled and unskilled labor reach a balance. So, for example, individuals look at the job market opportunities and choose an education that will align with market demands. On the other hand, firms will pay more for jobs that lead to more profits.

The HCT perception of education faces significant and various criticism (see Emrullah Tan 2014). I focus here on the criticism aimed at equilibrium in the context of rational individuals. The human capital market does not always reach equilibrium because: 1. individuals are not perfectly rational, 2. there are institutional constraints. Firstly, as students are not perfectly rational they will not choose the best-paid jobs. Many students misjudge job prospects and future wages due to imperfect information. As a young person you do not know how much a particular job will be valued on the market in the long-term. Moreover, education choices are driven by social influences like marketing, family, peer pressure, etc. Secondly, educational choices are constrained by institutions, e.g., gender or class. Such institutional constraints prevent some people from studying and getting higher-paid jobs (see Herbert Gintis 1971; Claudia Goldin 1992).

As a result, macro-level equilibrium in the human capital market is not achieved. As individuals do not always behave rationally e.g., we can observe the over-supply of college graduates in low-demand fields. Due to financial and institutional barriers many people from underprivileged groups are not able to attend college and their full potential is not captured on the market.

This is a broad brush on human capital. Now, I analyze how Becker's hard core of equilibrium can be immunized against criticism thanks to the protective belt. As HCT is based on rational individuals, we can implement the previously analyzed hard core assumptions of instrumental rationality and utility maximization. Instrumental rationality means that people are not perfectly rational but that they optimize within constraints. Therefore, even if people do not choose education leading to best paid jobs, this is not irrational because people choose within constraints, e.g., information asymmetry, and are influenced by marketing. Ultimately, an individual optimizes within various constraints, and not choosing the best option (a well-paid job) is not irrational. In the same way, institutional constraints do not undermine Becker's hard core of rationality. If one is from an unprivileged background and cannot afford to study, the optimization strategy is to find the best work that does not demand a college degree. In the end, rationality in Becker's economic approach is always bounded, and individuals have to optimize within constraints (budget, information, institutions).

The second part of the protective belt is utility maximization where utility is perceived *ad libitum*. Thus, we do not assess what gives people the most utility. From the perspective of HCT this means that it is not only money that matters when it comes

to a career choice. Becker focuses on financial gains but does not exclude other motivations: “Benefits include cultural and other nonmonetary gains along with improvement in earnings and occupations...” (Becker 1993, p. 392). Choosing a low-paid job is not irrational because people can value things other than financial gains. Ultimately, in HCT, individuals choose the best level of education based on cost-benefit analysis. However, the best means the optimal choice within various constraints.

This protective belt concerns the micro-level and the decisions of individuals. However, Becker’s equilibrium concerns also the macro-level, which means that in a well-functioning market, the demand and supply for skilled and unskilled labour will be in equilibrium. How can this hard core assumption be defended by a protective belt? In general, Becker argued that rational individuals are not necessary to reach equilibrium on the market (Becker 1962). Becker argued that market forces filter out individuals’ irrational behaviors on an aggregate level. This reasoning can be implemented in the context of HCT. Equilibrium on the market is achieved in the long run because wage differentials act as signals. If some skill is in high demand, the wage will rise. Consequently, this incentivizes more people to invest in that skill. On the other hand, if some skill is oversupplied, the wages will fall. Consequently, people are discouraged from investing in that skill. Due to market forces, an equilibrium between demand and supply will be reached. The second strategy for defending the hard core of equilibrium is to admit short-term disequilibrium. For Becker, equilibrium on the market is not reached once and for all, but can be disrupted by changes in the economy. For example, due to technology changes some jobs become obsolete while other new jobs are created. These changes can be perceived as shocks that lead to disequilibrium between supply and demand for jobs. However, in the long run, individuals, universities and firms adjust to the changes and change their optimizing strategies. Students change their educational choices, universities propose different courses, and firms adjust job positions. There is a time lag to these adjustments but in the long run different actors adjust to the changes on the market and a new equilibrium is reached. This process will repeat itself over and over again.

Ultimately, Becker proposes a tautological notion of equilibrium that empirical data cannot disprove. On the micro-level this means that individuals always reach equilibrium when investment in education is higher or equal to the costs. This was always the case because of the two previously analyzed hard core assumptions (1. instrumental rationality, 2. utility maximization). So, even if people do not choose an education that leads to the best paid job, this does not disprove the rationality assumption behind individuals’ choices. People optimize within constraints (asymmetry of information, social constraints, marketing, etc.) and choose the best option within these constraints. Secondly, utility *ad libitum* means that people can choose jobs not based on financial gains but other factors.

On the macro-level, the equilibrium is also defended by the protective belt. Firstly, Becker argued that rational people are not necessary because market forces filter out irrational behaviors on the aggregate level. Secondly, Becker did not perceive equilibrium as a fixed state. Therefore, the shocks on the market leading to disequilibrium can be incorporated as the market adjusts to them and seeks a long-term equilibrium.

2.2 The Problems with Utility Maximization and Instrumental Rationality

I will now analyze the problems with Becker's economic approach. I focus on instrumental rationality and utility maximization because Becker's analysis relates to microeconomics. Macro-level conclusions (equilibrium) result from rational individuals who maximize utility on the market.

The protective belt created by Becker defends the hard core. However, it leads to various problems. Let us start with instrumental rationality as presented in *A Theory of Rational Addiction*. Becker and Murphy write "Yet, as the title of our paper indicates, we claim that addictions, even strong ones, are usually rational in the sense of involving forward-looking maximization with stable preferences" (Becker and Kevin M. Murphy 1988, p. 675). The example of drugs shows how Becker brings the theory of rational choice to its logical end. The article's point is that addicted individuals are not irrational. Moreover, taking drugs maximizes the addict's utility. This understanding is feasible because Becker and Murphy apply instrumental rationality: "This paper relies on a weak concept of rationality that does not rule out strong discounts of future events. The consumers in our model become more and more myopic as time preference for the present (a) gets larger" (Becker and Murphy 1988, p. 683). Using drugs is rational because the state of bliss is so extreme that it overcomes future costs. It seems strange to perceive a heroin addict as rational if one considers the consequences of addiction. However, this problem does not bother Becker because, as economists, we do not presuppose what is good for individuals. It is merely assumed that people are utility maximizers. When it comes to drugs, individuals decide between present and future utility. Becker presupposes that weakness of will does not exist and that addicts somehow balance their short-term pleasures with long-term goals. Neoclassical economists do not know how individuals make this calculation (motivations are not important), but they assume that individuals do this in some way.

The assumption that people are utility maximizers is uncontested in the economic approach. Even when individuals regret some choices, it does not prove the existence of weakness of will. Becker and Murphy argue that smokers only claim to want to quit smoking and declarations do not mean much. If refraining from cigarettes gives someone more utility than smoking, one will quit smoking (Becker and Murphy 1988, p. 693). In Becker's approach it is actions, not declarations that matter. The difficulty with this perception of rationality is that many situations demonstrate the weirdness of the assumption that people always choose something because they desire it. In Becker's economic approach, an ex-alcoholic who does not want to drink because he knows where it can take him is rational when he comes back to drinking. This person does not want alcohol and after drinking he feels awful about his behaviour. The question then arises, "Is it possible to decide if the temporary need to relapse to alcohol is more important than goals and motivations?" Becker presumes that people can unify these competing motives and reduce them to a common denominator of utility. This perception of rationality leads to grotesque results, e.g., imagine a woman lying in a tiny lifeboat in the midst of the ocean due to a shipwreck. After one day, she is thirsty and considers drinking seawater. She is aware that she should not drink seawater because it will be harmful. In spite of this judgment, she falls to the temptation and drinks

the water. She becomes ill and dies. Is it justifiable to claim that she behaved rationally? Is a fleeting utility sufficient to consider some behavior rational?

These examples raise the question of whether there should be no difference between reason and biological needs, between long-term goals and simple pleasures? Should rationality be about goals or only means? Obviously, these examples are radical; but the questions that emerge from them relate to many behaviors. Individuals choose between the present and the future, e.g., spend now or be frugal and have savings for later; relax now or buckle down and rest more later. Becker, as a neoclassical economics, assumes that in every case, individuals choose what is best for them. However, behavioral economics and hyperbolic discounting question this assumption (Shane Frederick, George Loewenstein, and Ted O'donoghue 2002; Thaler 2015; Keith Marzilli Ericson and David Laibson 2019).

Let us move on to the problems with utility maximization. As has been indicated, Becker's economic approach does not assess goals, and understands utility *ad libitum*. This relativistic approach causes economics to grow insensitive to the variance in motives. We can observe this when self-interest and altruistic motivations are put into the black box of utility. This broad understanding means that value-free economics cannot differentiate between a soldier who jumps on a grenade to save her comrades from a soldier who pushes another soldier on a grenade to save herself. In both cases, she maximizes her utility. Value-freeness means that economics deals only with the consequences. Therefore, as in utilitarianism, it does not acknowledge any values independent of utility. However, the difference between intrinsic values and self-interest utility is significant. Sen showed this difference through the concepts of "sympathy" and "commitment" using the example of torture. If knowing that somebody is tortured makes you feel sick and diminishes your welfare, that is sympathy. If your welfare is not diminished by the fact that somebody is tortured but you still believe that it is wrong and it should be stopped, that is commitment (Sen 1977, p. 326).

The consequentialism of Becker's approach does not only mean that economics cannot differentiate between egoistic and altruistic behavior. The problem is larger. Economists cannot only concentrate on the choice because the background is also crucial. Sen presents the example of a hungry person to illustrate this point (Sen 1999, p. 75). In the first situation, hunger results from a food shortage. In the second situation, hunger results from religious reasons (fasting). Value-free economics is unable to see the dissimilarity between these two behaviors because it does not consider the motivations.

The above methodological problems with utility and rationality are not the most prevalent type of criticism in the literature because not everyone takes note of the protective belt. Most scholars, especially outside economics, criticize Becker for unrealistic assumptions. For them, the individuals presented by Becker are perfectly rational and completely egoistic, which contradicts observable facts (e.g., Daniel Cohen 2014; Joe Earl, Cahal Moran, and Zach Ward-Perkins 2016). The descriptive criticism misses the point because Becker builds his theory on axiomatic assumptions. Therefore, his theory always works and individuals always behave rationally and maximize their utility.

2.3 Becker's Failed Attempt at Escaping Tautology

I have analyzed the economic approach to show that neoclassical economics can absorb any descriptive criticism, and that the paradigm has remained mostly untouched due to the axiomatic assumptions. However, the expansion of the protective belt generates a crucial problem. Becker could defend the hard core by extending the notions of utility and rationality, but at the price of his approach turning into a tautology.

Becker did not want his approach to become a tautology. Therefore, stable preferences were introduced. In my paper, this assumption is treated as a negative heuristic (similar interpretation in Blaug 1992). Becker had two major motives for stable preferences. Firstly, as a sympathizer of value-free economics he thought that tastes and preferences cannot be discussed scientifically. The unwillingness to analyze human motivations is apparent when one looks at the title of Becker's and Stigler's article *De Gustibus Non Est Disputandum* (There is no accounting for tastes). In the article, Becker underlines the meaning of stable preferences: "One does not argue over tastes for the same reason one does not argue over the Rocky Mountains - both are there, will be there the next year, too, and are the same to all men" (Stigler and Becker 1977, p. 76). Becker was aware that he simplified reality by assuming stable preferences. However, this simplification was necessary because he did not want to become entangled in the infeasible analysis of human motivations. For Becker, preferences cannot be empirically tested. Moreover, he argued that no information about tastes is necessary for the economic approach to work.

Becker's second motive for stable preferences is predictive power. He wrote, "The assumption of stable preferences provides a stable foundation for generating predictions about responses to various changes..." (Becker 1976, p. 5). Becker analyzes the reverse assumption - tastes are changeable - to show the importance of stable preferences. A shift in taste can account for every anomalous behavior. Therefore, assuming that tastes are changeable explains everything and a "theory that explains everything, explains nothing" (quotation associated with Popper). Becker did not wish for his approach to become a pseudo-science like Marx and Freud's theories. Thus, he assumed stable preferences.

However, assuming stable preferences has a crucial weakness. It is counter to facts. Preferences change over time. Therefore, the economic approach cannot cope with some intertemporal choices. Each time individuals decide between the present and future, we cannot indicate what they should choose. However, this is not perceived as a problem because Becker assumes that individuals always choose what maximizes their utility. The problem with this picture is that individuals have diverse preferences over time due to hyperbolic discounting. Therefore, it is impossible to indicate individuals' true preferences. Instead, we should analyze preferences in the context of multiple selves (Thomas C. Schelling 1984; Jon Elster 1987; Frederick, Loewenstein, and O'donoghue 2002; Davis 2010; Ostapiuk 2019, 2021, 2022). The concept of multiple selves shows that each self has different preferences. When analyzing intertemporal choices we need to decide between the selves, and this decision is normative. Neoclassical economists want to be value-free and they do not decide between the selves. However, value-freeness is a mirage. When neoclassical economists presuppose that an individual constantly maximizes her utility, they unconsciously support the "short-

term human” because hyperbolic discounting shows that people are driven by instant pleasures and present bias.

Becker’s approach cannot acknowledge that people’s preferences change over time because it lacks predictive power without stable preferences. The value-freeness of Becker’s economic approach means that it cannot claim anything about preferences prior to the decision. Before a choice, we can only claim that individuals behave rationally and maximize their utility. However, due to the tautological nature of these statements, this does not signify anything. It is a more refined way of claiming that individuals choose something because they choose something. Without stable preferences, Becker’s approach could, at most, analyze decisions *post factum*, e.g., Sophia decided to buy this car because it maximizes her utility. However, we cannot predict what she will do.

Ultimately, the escape from tautology has not worked out. This was recognized by Blaug, who claimed that it is difficult to detect novel facts in the economic approach. Blaug argued that “Becker’s writings lend themselves all too easily to caricature because they employ a cumbersome apparatus to produce implications that are sometimes obvious, if not banal” (Blaug 1992, p. 223). Blaug claims that the economic approach is predominately built upon spruced up and well-known conjectures about human behavior with unwieldy and fancy formal mathematics labeled as predictions. Although these are portrayed as falsifiable and testable, Becker’s approach is repeatedly so general that it is “compatible with almost any finding” (Blaug 1992, p. 224). Blaug noted that Becker continually added extra *ad hoc* assumptions to explain every anomaly. Blaug called it “ad hocery” (Blaug 1992, p. 250) and criticized this approach. The previously analyzed complications indicate that Becker’s economic approach can be viewed as a degenerative programme. The auxiliary hypotheses are presented to defend the hard core, not to discover new facts.

3. The Degeneration of the Axioms of Neoclassical Economics

In the previous section I indicated some methodological problems with Becker’s approach concerning rationality, utility and choices over time. The conclusion was that Becker’s approach seems to be a degenerative programme as it does not lead to the discovery of new facts. This conclusion can be extrapolated, within limits, to NE since it is based on similar axioms concerning revealed preference theory and homo economicus. This section shows that NE has degenerated as a programme, but the analysis is not conducted from the Lakatosian perspective. I analyze the degeneration from a broader perspective than MSRP because not all economists would be convinced that the protective belt with tautological rationality and utility is a problem. Neoclassical economists are well aware of the tautological nature of their assumptions, but they still use them. The tautological nature of revealed preference theory is perceived as a strength, not a weakness (Faruk Gul and Wolfgang Pesendorfer 2008). Therefore, I analyze to what consequences these axioms have led. I focus on reality because the application of MSRP to economics, and consequently its conclusions, have been questioned. For example, it is argued that MSRP does not suit NE because predictive power is not the only goal of economics (de Marchi and Blaug 1991; Hands 2001). Moreover, economics lacks “crucial experiments” for prediction (Hands 1984, 1990). However,

this paper underlined that NE also has problems with explanation due to the tautologicality of rationality and utility. A methodologically savvy economist could argue that the tautologicality of utility and rationality is still not a problem because they are part and parcel of revealed preference theory's concept of preference, which can be perceived as "primitive" – something that does not need further analysis (Erick Angner 2018). Therefore, not establishing what is rational and what maximizes utility is an advantage of NE.

To respond to this argument, I will show that the axiomatization (lack of content) of utility and rationality does not make these concepts value-free. Neoclassical economists fill these axioms with content. This leads to normative conclusions which have a negative impact on well-being and ethics. This section is supplementary to Lakatos' analysis. It underlines the negative impact of the immunization strategy used in NE. I argue that NE started to degenerate because axioms ceased to work as value-free assumptions and took on a life of their own. Of course, my analysis is limited. There is a vast and growing literature on implicit values in economics (e.g., Philippe Mongin 2006; Putnam and Vivian Charles Walsh 2011; Jonathan B. Wight 2015; Earl, Moran, and Ward-Perkins 2016; Hausman, Michael McPherson, and Debra Satz 2016; Julian Reiss 2017; Colander and Huei-Chun Su 2018; Magdalena Małecka 2021). I focus on two previously analyzed assumptions: rationality and utility.

As already hinted, viewing economics as value-free leads to problems in reality. The biggest drawback is that many economists treat revealed preference theory as a positive, not normative theory (Thaler 1980, 2015). As a result, well-being is treated as a descriptive theory (Gul and Pesendorfer 2008). This is incorrect since there is no descriptive theory of well-being (Reiss 2013). We cannot discuss well-being without making some value judgments. Numerous neoclassical economists did not notice this since they rely on the formal not substantive theory of well-being, which does not say what good ultimately is, but only indicates how to discover what is good for individuals (Hausman, McPherson, and Satz 2016). Economists should just wait and observe individuals' choices. Reiss concludes, "economists should not have substantive views about the conception of the good. But this is of course to make a moral judgment and to subscribe to a particular theory of well-being: namely, wellbeing is what people desire" (Reiss 2013, p. 214). This view has a negative impact on people. Economics of happiness shows that revealed preferences are not always a satisfactory yardstick for well-being (Bruni and Pier Luigi Porta 2007; Bruno S. Frey 2018).

The problems with the axiomatic revealed preference theory are visible in choices over time, which play a crucial role in my investigation of Becker's approach. The traditional concept used by neoclassical economists is the discounted utility model (Samuelson 1937) in which people compare utility over time and make the best decision. Modigliani is the best illustration of the discounted utility model's application (Franco Modigliani 1966). His "life cycle hypothesis" is based on an individual's overall income. In this theory, individuals are rational since they are assumed to devise a strategy at a young age on how to smooth their consumption over their lives. Furthermore, people possess self-control and as such can realize the optimal strategy. It is not surprising that, over time, economics has encountered a growing number of examples which demonstrate that people do not discount future utility at an exponential rate due

to present bias. The influence of revealed preference theory on reality is even greater. We can find an analogy between the free market and revealed preference theory. Both assume that individuals behave rationally and always know what is best for them. It is enough to give them options, and they will choose following their autonomous preferences. Therefore, nobody should interfere with people's choices and negative freedom is sufficient.

Beyond well-being, the axiomatic assumptions of NE also influence ethics. Perceiving utility *ad libitum* can result in the dismissal of ethics and serve as a justification for egoism. Here we can observe how easy it is to fill neutral axioms with normative content. As was indicated earlier, Becker did not assume that people are only egoistic. In theory, people maximize utility both by egoism and altruism. However, axiomatic utility maximization leads to normative conclusions, like psychological egoism. A good example is Becker's theory of family (1974) where a wife's behavior is converted into altruism through self-interest. In this scenario, the husband reads a book in bed before falling asleep. The spouse does not approve of her husband's reading because it disrupts her sleep. However, the wife does not prohibit his reading because she realizes that a satisfied husband, on a higher level of utility, will offset her disturbance with interest. Her behavior is identical to a wife who loves her husband, but their motives vary. It is essential to note that the husband wants his wife to permit him to read because she loves him, not because it gives her utility.

The utility maximization framework supports psychological egoism in which egoistic motives explain every behavior. Even if people behave altruistically, it serves their self-interest. Using this framework, economists can argue that people give money to strangers in the dictator game because it maximizes their utility (pleasure from being a good person). The problem is that perceiving utility *ad libitum* means that there is no way to distinguish vile acts (murder) from altruistic ones (giving a kidney). This can lead to relativism and the dismissal of ethics. When people's only goal is to maximize utility perceived as self-interest, then "Learning economics, it seems, may make people more selfish" (Hausman and McPherson 1993, p. 674). Although it is a controversial claim, thinking within an economics framework can justify egoism. Therefore, economics was identified with Gordon Gekko's "greed is good", and business ethics was treated as an oxymoron. Although neoclassical economics does not assume that people are egoistic, its relativism leads to the dismissal of ethics and values independent of self-interest.

The problem with neutral axiomatic assumptions is that they are used by people. Even if economists strive to be neutral, they fill axioms with content based, for example, on their beliefs about human nature. Moreover, some assumptions have to be made to make models workable, e.g., economists assume the full rationality and self-interest of individuals (Rodrik 2015; Thaler 2015). For a long time, *homo economicus* has been a whipping boy that faces constant criticism from the social sciences. As I indicated earlier, descriptive criticism does not relate to the hard core of NE because the assumptions are neutral. Rationality means instrumental, not full rationality; and utility is maximized not only by self-interest but also by altruism. Nowadays, neoclassical economists argue that they always knew that individuals are not entirely egoistic and rational. Thus, *homo economicus* was a required reduction of a complex world, not its

depiction. However, this was not always the case. Conflating models with reality happens to revealed preference theory, which many economists perceived as a descriptive not a normative theory (Thaler 1980). In this section, I merely wanted to underline the importance of “performativity”, which indicates that theories used by scientists are not only tools but also influence the scientists who use them (Michel Callon 2006; Ivan Boldyrev and Ekatarina Svetlova 2016). From this perspective, *homo economicus* is the lens by which economists look at reality. Therefore, the value-free axioms of rationality and utility started to be filled with descriptive and normative content.

4. The Unchanging Soul of Neoclassical Economics

Throughout this paper I focus on Becker's economic approach. I have used the Lakatosian framework to analyze the hard core with the protective belt. I have shown the tautological nature of hard core assumptions (1. instrumental rationality, 2. utility maximization, 3. equilibrium). I have concluded that from the Lakatosian perspective, Becker's economic approach could be deemed a degenerative programme. At the beginning of the paper I claimed that problems with Becker's economic approach can be extrapolated to NE to some degree. The unchanging soul of neoclassical economics means that, as with Becker, NE can immunize its hard cores from criticism. In this section, I analyze how this is done.

Before starting, I need to limit my claim. My previous conclusions from Becker's analysis can be extrapolated to NE to a limited degree. This is the case because NE is an extremely vast approach. Thus, in the literature it is defined differently. Some use the term neoclassical economics, some mainstream and some orthodoxy. My analysis of NE is limited to Becker's economic approach and three hard core assumptions 1. instrumental rationality, 2. utility maximization, 3. equilibrium. Despite its limits, Becker's economic approach seems to represent the “soul” of neoclassical economics. Often, NE is defined as a closed system based on axioms (Tony Lawson 1997, 2003, 2006, 2013; Dow 2012). From this perspective, identifying Becker's economic approach with NE seems justified. My goal is to show how NE has been able to immunize itself from criticism over many years and persist as the dominant paradigm in economics. To show this I analyze two schools of thought that had an enormous influence on NE: 1. New behavioral economics, 2. New institutional economics.

4.1 New Behavioral Economics (NBE)

Initially, NBE was perceived as a competitive paradigm to NE. In the 80s, the “heuristics and bias” research programme was couched as a revolution in economics. However, NBE is now perceived to be a part of broad mainstream economics (Esther-Miriam Sent 2004a; Nathan Berg and Gerd Gigerenzer 2010; Dow 2013). This incorporation happened because criticism of behavioral economics does not threaten the hard core of neoclassical economics.

The most prevalent criticism (1. people are not rational, 2. people are not only egoistic, see Thaler 2015) does not threaten the hard core of NE. I have presented how these criticisms can be dismissed in the case of Becker. Firstly, thanks to instrumental rationality, economists can argue that people are not perfectly rational, but boundedly

rational. Due to constraints (time, cognitive powers) people optimize, not maximize. Secondly, due to utility *ad libitum*, economists can argue that altruistic behaviors, as in the dictator game, do not disprove utility maximization. Ultimately, utility can be maximized by altruistic behaviors.

When the insights from NBE are not threatening to the hard core of NE, they can be assimilated. The assimilation strategy means that NE incorporates insights from NBE within its hard core (see Berg and Gigerenzer 2010; Dow 2013; Siddiqui R. Osmani 2019; Ostapiuk 2024). For example, prospect theory can be modified by changing the shape of the function of utility (Osmani 2019), bounded rationality can be modeled in game theory (Sent 2004b) and hyperbolic discounting can be modeled within the utility framework (Ericson and Laibson 2019). Moreover, other-regarding preferences can be assimilated within the rational choice theory (e.g., Ernst Fehr and Urs Fischbacher 2002; Gintis 2007), and social influences can be analyzed within the utility framework (George Akerlof and Rachel Kerton 2000).

Finally, even if rational choice theory is criticized descriptively by NBE (how people behave), it is still treated as a normative theory (how people should behave) (see Berg and Gigerenzer 2010; Gerardo Infante, Guilhem Lecouteux, and Robert Sugden 2016). Thus, NE is perceived as a benchmark and criticism can be accepted. The argument is that if it were not for constraints like time and intellectual capacities we would behave like *homo economicus*.

4.2 New Institutional Economics (NIE)

New institutional economics (NIE) differs from new behavioral economics as it is a movement that emerged from inside NE, not from outside. However, neither school changed the hard core assumptions of NE but only adjusted NE to criticism. After WWII, NE was criticized for being an atomistic approach. It did not take institutions and social norms into consideration. In the 1970/80s NIE came to life as a reaction to this criticism. The goal was to explain the existence of legal, social and political institutions (Hodgson 2007). The main criticism considers the atomistic vision of people in NE. However, NIE also responds to the criticism concerning bounded rationality, bounded egoism and equilibrium.

Firstly, NIE rejected orthodox economics' notion of perfect rationality in which people maximize. Due to the world's complexity, uncertainty and transaction costs it is impossible to maximize. Thus, NIE uses bounded rationality and evades the criticism. Williamson writes that individuals are "intendedly rational but only limitedly so" (Oliver E. Williamson 1985, p. 45). Due to various external constraints people do not maximize but optimize. Moreover, to deal with a complex and uncertain world, individuals use institutions as heuristics. They are routines that make decisions easier and faster (Williamson 1985).

The second criticism is that bounded egoism seems more problematic, especially if we consider that Williamson wrote about opportunism and defines it as "self-interest seeking with guile" (Williamson 1985, pp. 47-48). In NIE, people are self-interested and can be deceitful. However, this does not mean that they are only self-interested. Firstly, utility maximization in NIE does not limit itself to material gains. People also maximize their utility by other means such as social approval or reputation.

Secondly, NIE perceives human behavior as the result of institutions. If social trust exists, people and firms are more likely to cooperate and behave altruistically.

The third criticism of NE to which NIE responds concerns atomism. NE is criticized for using methodological individualism. NIE adds institutions but sustains methodological individualism. In my previous analysis of Becker I did not directly analyze methodological individualism even though this is a framework used in the background because Becker focuses on individuals' decisions. I did not define methodological individualism as hard core because Becker did not include it either. However, Becker's reliance on methodological individualism can be connected with NE and NIE.

In general, methodological individualism reduces all social explanations to individuals. Miller writes "social explanations should be ultimately reducible to explanations in terms of people's beliefs, dispositions, and situations" (Richard Miller 1991, p. 749). In NE, any change in the tastes of an individual results only from the individual (Hodgson 2000). Thus, the individual is the foundation for NE. However, methodological individualism does not mean social atomism. It is a flexible approach that considers all social phenomena, but they are explained in terms of individuals. Becker's economic approach is the best example of methodological individualism's extensiveness. Becker shows how cultural and social factors can alter people's choices by adding these factors to the individual function of utility (Becker 1974, 1996). For example, Becker argued that people will avoid criminal activities due to the fear of social ostracism (Becker 1974). Despite its broadness, Becker's approach reduces social phenomena to a given individual. To explain social influences, the preference function must be immutable, and an individual with preferences is treated as a given (Hodgson 2000).

Similarly, NIE admits that institutions influence people. However, NIE perceives institutions similarly to Becker, as environmental constraints within which people optimize. In different cultures, people have different strategies, but they always optimize. Ultimately, institutions do not change individuals because they are treated as exogenous constraints to which individuals react, and the reaction is always optimal. In the end, NIE sustains the concept of *homo economicus*, which maximizes utility. The difference between NIE and Becker is that NIE assumes fixed preferences in the long run (Stigler and Becker 1977). However, as in Becker's economic approach, NIE is still based on methodological individualism where rational individuals react to the environment, not *vice versa* (Darley J. Kjosavik 2003; Arnsperger and Varoufakis 2006).

The fourth criticism of NE to which NIE responds concerns equilibrium. In general, institutions aim for efficiency. Their goal is to minimize transaction costs and reduce uncertainty. However, the concept of equilibrium is more nuanced than in NE. It accommodates imperfect information, bounded rationality, and various costs associated with institutional arrangements. Moreover, path dependency is recognized, meaning that historical events influence equilibrium (Douglass C. North 1990). Ultimately, NIE recognizes that institutions can lead to suboptimal and inefficient equilibria that can persist over time. However, this does not mean that the concept of equilibrium is dismissed. It is broadened by adding institutional constraints. Equilibrium is still a benchmark to which NIE adheres.

To conclude, my analysis of new behavioral economics and new institutional economics shows the unchanging soul of NE. Despite changes and the incorporation of criticism, the hard core assumptions of NE are sustained, that is: (1. instrumental rationality 2. utility maximization 3. equilibrium).

Does this mean that NE can deal with all criticism? The answer is no; the protective belt can deal with criticism that does not question the hard core and consequently does not question the scientific research programme. Examples of criticism that NE cannot account for come from heterodoxy.

4.3 Heterodox Criticism

Before starting, I need to underline the limits of my analysis regarding heterodoxy. Firstly, the criticism only refers to the hard core assumptions that were previously analyzed (1. instrumental rationality, 2. utility maximization, 3. equilibrium). Secondly, there is not a single paradigm that defines heterodoxy. It is an amalgam of different approaches. I analyze two schools (old behavioral economics, institutionalism) to show the criticism that NE cannot incorporate.

(1) Old behavioral economics is not accepted by NE as new behavioral economics. I focus on Simon, the main representant of old behavioral economics (Sent 2004a). Earlier, I showed that Simon's "bounded rationality" was incorporated within the NE optimization framework. However, this was misappropriation. Firstly, Simon's bounded rationality is not only a criticism of maximization. Secondly, Simon did not perceive bounded rationality as optimization (best choice within constraints). In reality, Simon proposed an alternative to NE with a different understanding of rationality. He wrote about "satisficing" when conventional knowledge and aspiration levels are essential (Simon 1957). Satisficing is different from optimization because people make choices which are "good enough"; not the best choices within constraints. Simon did not believe, as does NE, that we can deduce the behavior of individuals from an objective environment. Instead, he argued that we must know their mental processes (Simon 1957). Since Simon proposed an alternative programme with a different axiom from NE, it is not accepted by the mainstream. A similar story is with "fast and frugal heuristics" (Gigerenzer and Peter M. Todd 1999), which rejects NE's optimization axiom and presents an alternative. Thus, it is also not part of the mainstream.

(2) Institutionalism is not accepted by NE as new institutional economics. I focus on Veblen, who was one of the fiercest critics of NE. Firstly, Veblen dismissed methodological individualism. NIE and institutionalism are distinct schools because the former uses methodological individualism and the latter methodological holism. In methodological holism, social entities are autonomous and irreducible (Robert Audi 1995). This means that social structures such as institutions are independent of individuals' beliefs and goals. Institutionalism does not perceive institutions in the same way as NIE, where analysis is from individuals to institutions (methodological individualism), but through "reconstitutive downward causation" (Hodgson 2000). The analysis is conducted from institutions to individuals (methodological holism). In this way, institutions hold causal power over individuals and influence individuals fundamentally (change their goals). Institutionalists like Veblen argue that the individual is not a given but is transformed by institutions. Secondly, the entire concept of homo

economicus is rejected with the assumption of rationality as utility maximization. Institutionalists like Thorstein Veblen (1919) presented an alternative theory of human agency where habits and instincts replace maximization. This means that people's decisions are influenced not only by deliberative but also non-deliberative sources such as culture, social norms, etc. In this way, institutionalists reject NIE's notions of optimization and methodological individualism. Firstly, habits do not mean that people optimize. Secondly, institutions are independent from individuals and they shape people's goals, beliefs and preferences. Institutions are not the only constraints within which we optimize, as nowadays, endogenous preferences have a similar role (e.g., Samuel Bowles 1998, 2004). The last issue concerns equilibrium. Veblen and other institutionalists are close to NIE because both emphasize that historical events influence equilibrium. However, the difference between institutionalism and NIE is crucial because Veblen dismissed the notion of equilibrium altogether (Veblen 1898). Although NIE modified its notion of equilibrium by adding suboptimal results, the framework of equilibrium is sustained. To conclude, institutionalists dismissed hard core assumptions and proposed an alternative paradigm to NE. Thus, they are not accepted by the mainstream.

Old behavioral economics and institutionalism represent only a fraction of heterodoxy. However, due to the constraints of this paper I cannot represent the whole variety of heterodox approaches (e.g., feminist economics, evolutionary economics, complexity economics and post-Keynesian economics). But, the two analyzed examples can serve to underline a broader point concerning heterodoxy. All heterodox approaches criticize the hard core assumptions of NE (1. instrumental rationality; 2. utility maximization; 3. equilibrium). Therefore, they cannot be incorporated by NE and exist outside the mainstream. Ultimately, heterodoxy can be defined as an open system in opposition to NE's closed system based on axioms (Lawson 1997, 2003, 2013; Dow 2012; Marc Lavoie 2022).

This goal of this section was to show the unchanging soul of NE. I have shown how approaches which are critical toward NE could be incorporated within its hard core. On the other hand, dismissing NE's hard core assumptions relegates one to heterodoxy.

5. Conclusions

The principal objective of the article was to show that the neoclassical economics' paradigm has not changed significantly despite widespread criticism. I have analyzed Becker's economic approach using the methodology of scientific research programmes (MSRP) to demonstrate this. Immunization from criticism is possible due to the extension of the protective belt, where utility and rationality can mean anything. This explains why descriptive criticism aimed at revealed preference theory and homo economicus does not work. However, the tautologicality of these hard core assumptions leads to problems with prediction and explanation. As a result, the economic approach would appear to be a degenerative programme. This conclusion could be extrapolated, within bounds, to encompass neoclassical economics, as it is based on similar axioms to Becker's approach. A historical reconstruction of neoclassical economics was made to underline this similarity. The paper's penultimate section moves

beyond MSRP. Displaying the problems with the protective belt may be insufficient to convince neoclassical economists that they are using a degenerative programme. Ultimately, economists use axioms because they want to be objective scientists (see Mirowski 2002). Therefore, I show the degeneration of NE using the example of axioms that have gained normative content. In the last section, I show the unchanging soul of neoclassical economics and the heterodox criticism of NE's hard core assumptions.

This article concludes that neoclassical economics is a degenerative programme due to the tautologicality of its axioms. I do not want to be misunderstood here; the axiomatic assumptions are not a problem in themselves. Deductive thinking works in mathematics. However, what works for mathematics does not necessarily work for economics (see Lawson 1997, 2003, 2013). Firstly, axiomatic thinking boosts economists' epistemological self-confidence, which hinders change in economics and causes a reluctance toward methodological pluralism and normative approaches. Secondly, economists do not always treat their axioms as technical assumptions. They are filled with normative content.

I want to end with a broader point. My main goal was to show the immunization strategy used in neoclassical economics. I underline many problems with the tautological nature of rationality, utility and equilibrium, while the main problem with the extension of the protective belt is that it has led to dogmatism. Surely, an immunization strategy is a normal part of science and has advantages (Kuhn 1970). However, some neoclassical economists do not defend the hard core in order to improve their programme, but because it is a dogma that must be protected. In the end, neoclassical economists should take to heart the critical attitude proscribed by Popper and abandon a theory if it does not work well.

References

- Akerlof, George, and Rachel Kranton. 2000. "Economics and Identity." *Quarterly Journal of Economics*, 115(3): 715-753. <http://dx.doi.org/10.1162/003355300554881>
- Angner, Erick. 2018. "What Preferences Really Are." *Philosophy of Science*, 85(4): 660-681. <http://dx.doi.org/10.1086/699193>
- Arnsperger, Christian, and Yanis Varoufakis. 2006. "What Is Neoclassical Economics? The Three Axioms Responsible for Its Theoretical Oeuvre, Practical Irrelevance and, thus, Discursive Power." *Panoeconomicus*, 53(1): 5-18. <http://dx.doi.org/10.2298/PAN0601005A>
- Audi, Robert. 1995. *The Cambridge Dictionary of Philosophy*. Cambridge, M. A.: Cambridge University Press.
- Backhouse, Roger E. 1994. "The Lakatosian Legacy in Economic Methodology." In *New Directions in Economic Methodology*, ed. Roger Backhouse, 175-193. London: Routledge.
- Becker, Garry S. 1962. "Irrational Behavior and Economic Theory." *Journal of Political Economy*, 70(1): 1-13. <http://dx.doi.org/10.1086/258584>
- Becker, Garry S. 1974. "A Theory of Social Interactions." *Journal of Political Economy*, 82(6): 1063-1093. <http://dx.doi.org/10.1086/260265>
- Becker, Garry S. 1976. *The Economic Approach to Human Behavior*. Chicago: University of Chicago Press.
- Becker, Garry S. 1981. *A Treatise on the Family*. Cambridge, M. A.: Harvard University Press.
- Becker, Garry S., and Kevin M. Murphy. 1988. "A Theory of Rational Addiction." *Journal of Political Economy*, 96(4): 675-700. <http://dx.doi.org/10.1086/261558>
- Becker, Garry S. 1993. "The Economic Way of Looking at Behavior." *The Journal of Political Economy*, 101(3): 385-409.
- Becker, Garry S. 1994. *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education*. 3rd ed. Chicago: University of Chicago Press.
- Becker, Garry S. 1996. *Accounting for Tastes*. Cambridge, M. A.: Harvard University Press.
- Berg, Nathan, and Gerd Gigerenzer. 2010. "As-If Behavioral Economics: Neoclassical Economics in Disguise?" *History of Economic Ideas*, 18(1): 1000-1033.
- Blaug, Mark. 1992. *The Methodology of Economics: Or how Economists Explain*. 2nd ed. Cambridge, M. A.: Cambridge University Press.
- Blaug, Mark. 1997. *Economic Theory in Retrospect*. Cambridge, M. A.: Cambridge University Press.
- Blaug, Mark. 2003. "The Formalist Revolution of the 1950s." *Journal of the History of Economic Thought*, 25(2): 145-156. <http://dx.doi.org/10.1080/1042771032000083309>
- Boland, Lawrence. 1979. "A Critique of Friedman's Critics." *Journal of Economic Literature*, 17(2): 503-522.
- Boland, Lawrence. 1981. "On the Futility of Criticizing the Neoclassical Maximization Hypothesis." *The American Economic Review*, 71(5): 1031-1036.
- Boldyrev, Ivan, and Ekaterina Svetlova. 2016. *Enacting Dismal Science: New Perspectives on the Performativity of Economics*. London: Palgrave Macmillan.
- Bowles, Samuel. 1998. "Endogenous Preferences: The Cultural Consequences of Markets and Other Economic Institutions." *Journal of Economic Literature*, 36(1): 75-111.

- Bowles, Samuel.** 2004. *Microeconomics: Behavior, Institutions, and Evolution*. Princeton: Princeton University Press.
- Bruni, Luigino, and Pier Luigi Porta.** 2007. *Handbook on the Economics of Happiness*. Cheltenham: Edward Elgar Publishing.
- Bruni, Luigino, and Robert Sugden.** 2007. "The Road Not Taken: How Psychology Was Removed from Economics, and how It Might Be Brought Back." *The Economic Journal*, 117(516): 146-173. <http://dx.doi.org/10.1111/j.1468-0297.2007.02005.x>
- Brzezinski, Michal, and Michal Dzielinski.** 2009. "Is Endogenous Growth Theory Degenerating? Another Look at Lakatosian Appraisal of Growth Theories." *Journal of Economic Methodology*, 16(3): 243-263. <http://dx.doi.org/10.1080/13501780903121675>
- Caldwell, Bruce.** 1982. *Beyond Positivism: Economic Methodology in the Twentieth Century*. London: Allen and Unwin.
- Callon, Michel.** 2006. "What Does It Mean to Say That Economics Is Performative?" Centre de Sociologie de l'Innovation Working Paper 5.
- Carnap, Rudolf.** 1935. *Philosophy and Logical Syntax*. London: Kegan Paul, Trench, Trubner & Co.
- Carnap, Rudolf.** 1937. *Logical Syntax of Language*. London: Kegan Paul, Trench, Trubner & Co.
- Cedrini, Mario, and Magda Fontana.** 2018. "Just Another Niche in the Wall? How Specialization Is Changing the Face of Mainstream Economics." *Cambridge Journal of Economics*, 42(2): 427-451. <http://dx.doi.org/10.1093/cje/bex003>
- Cohen, Daniel.** 2014. *Homo Economicus, the (Lost) Prophet of Modern Times*. Cambridge, M. A.: Polity Press.
- Colander, David.** 2000. "The Death of Neoclassical Economics." *Journal of the History of Economic Thought*, 22(2): 127-143. <http://dx.doi.org/10.1080/10427710050025330>
- Colander, David, Richard Holt, and Barkley Rosser Jr.** 2004. "The Changing Face of Mainstream Economics." *Review of Political Economy*, 16(4): 485-499. <http://dx.doi.org/10.1080/0953825042000256702>
- Colander, David, and Huei-Chun Su.** 2018. *How Economics Should Be Done: Essays on the Art and Craft of Economics*. Cheltenham: Edward Elgar Publishing.
- Davis, John B.** 2006. "The Turn in Economics: Neoclassical Dominance to Mainstream Pluralism." *Journal of Institutional Economics*, 2(2): 1-20. <http://dx.doi.org/10.1017/S1744137405000263>
- Davis, John B.** 2008. "The Turn in Recent Economics and Return of Orthodoxy." *Cambridge Journal of Economics*, 32(3): 349-366. <http://dx.doi.org/10.1093/cje/bem048>
- Davis, John B.** 2010. *Individuals and Identity in Economics*. Cambridge, M. A.: Cambridge University Press.
- Deane, Phyllis.** 1983. "The Scope and Method of Economic Science." *The Economic Journal*, 93(369): 1-12. <http://dx.doi.org/10.2307/2232161>
- De Marchi, Neil, and Mark Blaug.** 1991. *Appraising Economic Theories: Studies in the Methodology of Research Programs*. Cheltenham: Edward Elgar Publishing.
- Dobusch, Leonhard, and Jakob Kapeller.** 2009. "Why Is Economics Not an Evolutionary Science? New Answers to Veblen's Old Question." *Journal of Economic Issues*, 43(4): 867-898. <http://dx.doi.org/10.2753/JEI0021-3624430403>
- Dow, Sheila.** 2012. *Foundations for New Economic Thinking: A Collection of Essays*. London: Palgrave Macmillan.

- Dow, Sheila.** 2013. "Formalism, Rationality, and Evidence: The Case of Behavioural Economics." *Erasmus Journal for Philosophy and Economics*, 6(3): 26-43. <http://dx.doi.org/10.23941/ejpe.v6i3.149>
- Drakopoulos, Stavros A., and Anastassios D. Karayiannis.** 2005. "A Review of Kuhnian and Lakatosian 'Explanations' in Economics." *History of Economic Ideas*, 13(22): 51-73.
- Earle, Joe, Cahal Moran, and Zach Ward-Perkins.** 2016. *Econocracy: The Perils of Leaving Economics to the Experts*. Manchester: Manchester University Press.
- Elster, Jon.** 1987. *The Multiple Self*. Cambridge, M. A.: Cambridge University Press.
- Ericson, Keith Marzilli, and David Laibson.** 2019. "Intertemporal Choice." In *Handbook of Behavioral Economics: Applications and Foundations*, 1-67. Amsterdam: North-Holland.
- Fehr, Ernst, and Urs Fischbacher.** 2002. "Why Social Preferences Matter: The Impact of Non-Selfish Motives on Competition, Cooperation and Incentives." *The Economic Journal*, 112(478): C1-C33. <http://dx.doi.org/10.1111/1468-0297.00027>
- Feyerabend, Paul.** 1975. *Against Method: Outline of an Anarchist Theory of Knowledge*. London: Verso.
- Fourcade, Marion, Etienne Ollion, and Yann Algan.** 2015. "The Superiority of Economists." *Journal of Economic Perspectives*, 29(1): 89-114. <http://dx.doi.org/10.1257/jep.29.1.89>
- Frederick, Shane, George Loewenstein, and Ted O'donoghue.** 2002. "Time Discounting and Time Preference: A Critical Review." *Journal of Economic Literature*, 40(2): 351-401. <http://dx.doi.org/10.1257/jel.40.2.351>
- Frey, Bruno S.** 2018. *Economics of Happiness*. Berlin: Springer.
- Friedman, Milton.** 1953. *Essays in Positive Economics*. Chicago: University of Chicago Press.
- Gigerenzer, Gerd, and Peter M. Todd.** 1999. *Simple Heuristics That Make Us Smart*. Oxford: Oxford University Press.
- Gintis, Herbert.** 1971. "Education, Technology, and the Characteristics of Worker Productivity." *The American Economic Review*, 61(2): 266-279.
- Gintis, Herbert.** 2007. "A Framework for the Unification of the Behavioral Sciences." *Behavioral and Brain Sciences*, 30(1): 1-16. <http://dx.doi.org/10.1017/S0140525X07000581>
- Gloria-Palermo, Sandye.** 2010. "Introducing Formalism in Economics: The Growth Model of John von Neumann." *Panoeconomicus*, 57(2): 153-172. <http://dx.doi.org/10.2298/PAN1002153G>
- Goldin, Claudia.** 1992. *Understanding the Gender Gap: An Economic History of American Women*. Oxford: Oxford University Press.
- Gonzalez, Wenceslao J.** 2014. "The Evolution of Lakatos's Repercussion on the Methodology of Economics." *HOPOS: The Journal of the International Society for the History of Philosophy of Science*, 4(1): 1-25. <http://dx.doi.org/10.1086/675401>
- Gräbner, Claudius, and Birte Strunk.** 2020. "Pluralism in Economics: Its Critiques and Their Lessons." *Journal of Economic Methodology*, 27(4): 311-329. <http://dx.doi.org/10.1080/1350178X.2020.1824076>
- Gul, Faruk, and Wolfgang Pesendorfer.** 2008. "The Case for Mindless Economics." In *The Foundations of Positive and Normative Economics: A Handbook*, ed. Andrew Caplin and Andrew Schotter, 3-39. Oxford: Oxford University Press.

- Hands, D. Wade.** 1984. "The Role of Crucial Counterexamples in the Growth of Economic Knowledge: Two Case Studies in the Recent History of Economic Thought." *History of Political Economy*, 16(1): 59-67. <http://dx.doi.org/10.1215/00182702-16-1-59>
- Hands, D. Wade.** 1990. "Second Thoughts on 'Second Thoughts': Reconsidering the Lakatosian Progress of the General Theory." *Review of Political Economy*, 2(1): 69-81.
- Hands, D. Wade.** 1993. "Popper and Lakatos in Economic Methodology." In *Rationality, Institutions and Economic Methodology*, ed. Bo Gustafsson, Christian Knudsen, and Uskali Mäki, 61-75. London: Routledge.
- Hands, D. Wade.** 2001. *Reflection without Rules: Economic Methodology and Contemporary Science Theory*. Cambridge, M. A.: Cambridge University Press.
- Hausman, Daniel M.** 1992. *The Inexact and Separate Science of Economics*. Cambridge, M. A.: Cambridge University Press.
- Hausman, Daniel M., and Michael S. McPherson.** 1993. "Taking Ethics Seriously: Economics and Contemporary Moral Philosophy." *Journal of Economic Literature*, 31(2): 671-731.
- Hausman, Daniel M., Michael McPherson, and Debra Satz.** 2016. *Economic Analysis, Moral Philosophy, and Public Policy*. Cambridge, M. A.: Cambridge University Press.
- Herfeld, Catherine.** 2021. "Understanding the Rationality Principle in Economics as a Functional a priori Principle." *Synthese*, 198(S14): 3329-3358. <http://dx.doi.org/10.1007/s11229-020-02730-z>
- Hodgson, Geoffrey M.** 2000. "What Is the Essence of Institutional Economics?" *Journal of Economic Issues*, 34(2): 317-329. <http://dx.doi.org/10.1080/00213624.2000.11506269>
- Hodgson, Geoffrey M.** 2001. *How Economics Forgot History: The Problem of Historical Specificity in Social Science*. London: Routledge.
- Hodgson, Geoffrey M.** 2004. *The Evolution of Institutional Economics*. London: Routledge.
- Hodgson, Geoffrey M.** 2007. "Evolutionary and Institutional Economics as the New Mainstream." *Evolutionary and Institutional Economics Review*, 4(1): 7-25. <http://dx.doi.org/10.14441/eier.4.7>
- Hodgson, Geoffrey M.** 2012. "On the Limits of Rational Choice Theory." *Economic Thought*, 1(1): 94-108.
- Hoyningen-Huene, Paul.** 2021. "Revisiting Friedman's 'On the Methodology of Positive Economics' ('F53')." *Methodus*, 10(2): 146-182. <http://dx.doi.org/10.5771/0718-2775-2021-2-146>
- Hume, David.** 1896. *A Treatise of Human Nature*. Oxford: Clarendon Press.
- Infante, Gerardo, Guilhem Lecouteux, and Robert Sugden.** 2016. "Preference Purification and the Inner Rational Agent: A Critique of the Conventional Wisdom of Behavioural Welfare Economics." *Journal of Economic Methodology*, 23(1): 1-25. <http://dx.doi.org/10.1080/1350178X.2015.1070527>
- Kahneman, Daniel.** 2011. *Thinking, Fast and Slow*. New York: Macmillan.
- Kapeller, Jakob.** 2013. "'Model-Platonism' in Economics: On a Classical Epistemological Critique." *Journal of Institutional Economics*, 9(2): 199-221. <http://dx.doi.org/10.1017/S1744137413000052>
- Keynes, John Neville.** 1891. *The Scope and Method of Political Economy*. Ontario: Batoche Books, 1999.
- Kjosavik, Darley J.** 2003. "Methodological Individualism and Rational Choice in Neoclassical Economics: A Review of Institutional Critique." *Forum for*

- Development Studies*, 30(2): 205-245.
<http://dx.doi.org/10.1080/08039410.2003.9666244>
- Knight, Frank H.** 1921. *Risk, Uncertainty and Profit*. Boston: Houghton Mifflin.
- Kuhn, Thomas S.** 1970. *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press.
- Kvangraven, Ingrid H.** 2021. "Beyond the Stereotype: Restating the Relevance of the Dependency Research Programme." *Development and Change*, 52(1): 76-112.
<http://dx.doi.org/10.1111/dech.12593>
- Lakatos, Imre.** 1980. *The Methodology of Scientific Research Programmes*. Vol 1. Cambridge, M. A.: Cambridge University Press.
- Lavoie, Marc.** 2022. *Post-Keynesian Economics: New Foundations*. Cheltenham: Edward Elgar Publishing.
- Lawson, Tony.** 1997. *Economics and Reality*. London: Routledge.
- Lawson, Tony.** 2003. *Reorienting Economics*. London: Routledge.
- Lawson, Tony.** 2006. "The Nature of Heterodox Economics." *Cambridge Journal of Economics*, 30(4): 483-505. <http://dx.doi.org/10.1093/cje/bei093>
- Lawson, Tony.** 2013. "What Is This School Called Neoclassical Economics?" *Cambridge Journal of Economics*, 37(5): 947-983. <http://dx.doi.org/10.1093/cje/bet027>
- Lazear, Edward P.** 2000. "Economic Imperialism." *The Quarterly Journal of Economics*, 115(1): 99-146. <http://dx.doi.org/10.1162/003355300554683>
- Madra, Yahya M.** 2016. *Late Neoclassical Economics: The Restoration of Theoretical Humanism in Contemporary Economic Theory*. London: Routledge.
- Mäki, Uskali.** 2009a. "Economics Imperialism: Concept and Constraints." *Philosophy of the Social Sciences*, 39(3): 351-380. <http://dx.doi.org/10.1177/0048393108319023>
- Mäki, Uskali.** 2009b. "Unrealistic Assumptions and Unnecessary Confusions: Rereading and Rewriting F53 as a Realist Statement." In *The Methodology of Positive Economics: Reflections on the Milton Friedman Legacy*, ed. Uskali Mäki, 90-116. Cambridge, M. A.: Cambridge University Press. <http://dx.doi.org/10.1017/CBO9780511581427.005>
- Mäki, Uskali, Adrian Walsh, and Manuela Fernández Pinto, eds.** 2017. *Scientific Imperialism: Exploring the Boundaries of Interdisciplinarity*. London: Routledge.
- Malecka, Magdalena.** 2021. "Values in Economics: A Recent Revival with a Twist." *Journal of Economic Methodology*, 28(1): 88-97.
<http://dx.doi.org/10.1080/1350178X.2020.1868776>
- Miller, Richard.** 1991. "Fact and Method in the Social Sciences." In *The Philosophy of Science*, ed. Richard Boyd, Philip Gasper, and John D. Trou, 743-762. Cambridge, M. A.: MIT Press.
- Mirowski, Philip.** 1991. *More Heat Than Light: Economics as Social Physics, Physics as Nature's Economics*. Cambridge, M. A.: Cambridge University Press.
- Mirowski, Philip.** 2002. *Machine Dreams: Economics Becomes a Cyborg Science*. Cambridge, M. A.: Cambridge University Press.
- Modigliani, Franco.** 1966. "The Life Cycle Hypothesis of Saving, the Demand for Wealth and the Supply of Capital." *Social Research*, 33(2): 160-217.
- Mongin, Philippe.** 2006. "Value Judgments and Value Neutrality in Economics." *Economica*, 73(290): 257-286.
- North, Douglass C.** 1990. *Institutions, Institutional Change and Economic Performance*. Cambridge, M. A.: Cambridge University Press.

- Osmani, Siddiqur R.** 2019. "Rationality, Behavioural Economics and Amartya Sen." *Journal of Human Development and Capabilities*, 20(2): 162-180. <http://dx.doi.org/10.1080/19452829.2019.1565631>
- Ostapiuk, Aleksander.** 2019. "Human Now versus Human over Time: When Instrumental Rationality and Utility Are Not Enough." *Panoeconomicus*, 66(5): 633-657. <http://dx.doi.org/10.2298/PAN161203026O>
- Ostapiuk, Aleksander.** 2021. *The Eclipse of Value-Free Economics: The Concept of Multiple Self versus Homo Economicus*. Wrocław: Publishing House of Wrocław University of Economics and Business.
- Ostapiuk, Aleksander.** 2022. "Weakness of Will: The Limitations of Revealed Preference Theory." *Acta Oeconomica*, 72(1): 1-23. <http://dx.doi.org/10.1556/032.2022.00001>
- Ostapiuk, Aleksander.** 2024. "Neoclassical Economics' Immunisation Strategies against Behavioural Economics: Popper's Perspective." *Gospodarka Narodowa: The Polish Journal of Economics*, 320(4): 51-73. <http://dx.doi.org/10.33119/GN/190911>
- Popper, Karl.** 1959. *The Logic of Scientific Discovery*. New York: Basic Books.
- Putnam, Hilary.** 2002. *The Collapse of the Fact/Value Dichotomy and Other Essays*. Cambridge, M. A.: Harvard University Press.
- Putnam, Hilary, and Vivian Charles Walsh, eds.** 2012. *The End of Value-Free Economics*. London: Routledge.
- Quine, Willard V.** 1951. "Main Trends in Recent Philosophy: Two Dogmas of Empiricism." *The Philosophical Review*, 60(1): 20-43.
- Reiss, Julian.** 2013. *Philosophy of Economics: A Contemporary Introduction*. London: Routledge.
- Reiss, Julian.** 2017. "Fact-Value Entanglement in Positive Economics." *Journal of Economic Methodology*, 24(2): 134-149. <http://dx.doi.org/10.1080/1350178X.2017.1309749>
- Robbins, Lionel.** 1932. *An Essay on the Nature and Significance of Economic Science*. New York: Macmillan.
- Rodrik, Dani.** 2015. *Economics Rules: The Rights and Wrongs of the Dismal Science*. New York: W. W. Norton & Company.
- Royal Swedish Academy of Sciences.** 1993. "The Nobel Memorial Prize in Economics 1992: Press Release from the Royal Swedish Academy of Sciences." *Scandinavian Journal of Economics*, 95(1): 1-5.
- Samuelson, Paul A.** 1937. "A Note on Measurement of Utility." *The Review of Economic Studies*, 4(2): 155-161. <http://dx.doi.org/10.2307/2967612>
- Samuelson, Paul A.** 1938. "A Note on the Pure Theory of Consumer's Behaviour." *Economica*, 5(17): 61-71. <http://dx.doi.org/10.2307/2548836>
- Schelling, Thomas C.** 1984. "Self-Command in Practice, in Policy, and in a Theory of Rational Choice." *The American Economic Review*, 74(2): 1-11.
- Sen, Amartya.** 1973. "Behaviour and the Concept of Preference." *Economica*, 40(159): 241-259. <http://dx.doi.org/10.2307/2552796>
- Sen, Amartya.** 1977. "Rational Fools: A Critique of the Behavioural Foundations of Economic Theory." *Philosophy and Public Affairs*, 6(4): 317-344.
- Sen, Amartya.** 1999. *Development as Freedom*. New York: Knopf.
- Sent, Esther-Mirjam.** 2004a. "Behavioral Economics: How Psychology Made Its (Limited) Way Back into Economics." *History of Political Economy*, 36(4): 735-760. <http://dx.doi.org/10.1215/00182702-36-4-735>

- Sent, Esther-Mirjam.** 2004b. "The Legacy of Herbert Simon in Game Theory." *Journal of Economic Behavior & Organization*, 53(3): 303-317.
<http://dx.doi.org/10.1016/j.jebo.2002.10.006>
- Simon, Herbert A.** 1957. *Administrative Behavior: A Study of Decision-Making Processes in Administrative Organization*. 2nd ed. New York: Macmillan.
- Skidelsky, Robert.** 2020. *What's Wrong with Economics?* New Haven: Yale University Press.
- Stigler, George J., and Gary S. Becker.** 1977. "De gustibus non est disputandum." *The American Economic Review*, 67(2): 76-90.
<http://dx.doi.org/10.4159/9780674020658-003>
- Swedberg, Richard.** 1990. *Economics and Sociology*. Princeton: Princeton University Press.
- Tan, Emrullah.** 2014. "Human Capital Theory: A Holistic Criticism." *Review of Educational Research*, 84(3): 411-445. <http://dx.doi.org/10.3102/0034654314532696>
- Thaler, Richard.** 1980. "Toward a Positive Theory of Consumer Choice." *Journal of Economic Behavior and Organization*, 1(1): 39-60.
[http://dx.doi.org/10.1016/0167-2681\(80\)90051-7](http://dx.doi.org/10.1016/0167-2681(80)90051-7)
- Thaler, Richard.** 2015. *Misbehaving: The Making of Behavioral Economics*. New York: W. W. Norton & Company.
- Tribe, Keith.** 2021. *Constructing Economic Science: The Invention of a Discipline 1850-1950*. Oxford: Oxford University Press.
- Van Dalen, Hendrik P.** 2019. "Values of Economists Matter in the Art and Science of Economics." *Kyklos*, 72(3): 472-499. <http://dx.doi.org/10.1111/kykl.12208>
- Veblen, Thorstein.** 1898. "Why Is Economics Not an Evolutionary Science?" *The Quarterly Journal of Economics*, 12(4): 373-397. <http://dx.doi.org/10.2307/1882952>
- Veblen, Thorstein.** 1919. *The Place of Science in Modern Civilisation and Other Essays*. New York City: Huebsch.
- Weintraub, E. Roy.** 2002. *How Economics Became a Mathematical Science*. Durham: Duke University Press.
- Wight, Jonathan B.** 2015. *Ethics in Economics: An Introduction to Moral Frameworks*. California: Stanford University Press.
- Williamson, Oliver E.** 1985. *The Economic Institutions of Capitalism*. Washington, D. C.: Free Press.
- Witztum, Amos.** 2007. "Ethics and the Science of Economics: Robbins's Enduring Fallacy." In *Lionel Robbins' Essay on the Nature and Significance of Economic Science: 75th Anniversary Conference Proceedings*, ed. Frank Cowell and Amos Witztum, 57-85. London: School of Economics and Political Science.
- Yonay, Yuval P.** 1998. *The Struggle over the Soul of Economics: Institutional and Neoclassical Economists in America between the Wars*. Princeton: Princeton University Press.
- Yuengert, Andrew M.** 2000. *The Positive-Normative Distinction before the Fact-Value Distinction*. Malibu: Pepperdine University.
- Zouboulakis, Michel.** 2014. *The Varieties of Economic Rationality: From Adam Smith to Contemporary Behavioural and Evolutionary Economics*. London: Routledge.

THIS PAGE INTENTIONALLY LEFT BLANK