

Linsbichler, Alexander

Working Paper

Philosophy of Austrian economics - Extended cut

CHOPE Working Paper, No. 2021-24

Provided in Cooperation with:

Center for the History of Political Economy at Duke University

Suggested Citation: Linsbichler, Alexander (2021) : Philosophy of Austrian economics - Extended cut, CHOPE Working Paper, No. 2021-24, Duke University, Center for the History of Political Economy (CHOPE), Durham, NC

This Version is available at:

<https://hdl.handle.net/10419/248440>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

PHILOSOPHY OF AUSTRIAN ECONOMICS – EXTENDED CUT

ALEXANDER LINSBICHLER

CHOPE WORKING PAPER No. 2021-24
DECEMBER 2021



CENTER FOR THE
HISTORY OF POLITICAL ECONOMY
AT DUKE UNIVERSITY

Philosophy of Austrian Economics – Extended Cut¹

Alexander Linsbichler (University of Vienna, Austria)

alexander.linsbichler@univie.ac.at

Abstract: Carl Menger’s *Principles of Economics*, published in 1871, is usually regarded as the founding document of the Austrian School of economics. Many of the School’s prominent representatives, including Friedrich Wieser, Eugen Böhm-Bawerk, Ludwig Mises, Hans Mayer, Friedrich August Hayek, Fritz Machlup, Oskar Morgenstern, and Gottfried Haberler, as well as Israel Kirzner, Ludwig Lachmann, Murray Rothbard, Don Lavoie, and Peter Boettke, advanced and modified Menger’s research program in sometimes conflicting ways. Yet, some characteristics of the Austrian School remain (nearly) consensual from its foundation through to contemporary neo-Austrian economists. In eight sections, we will briefly discuss some of the philosophical and methodological characteristics of Austrian economics: Austrian action theory and interpretative understanding, a relatively thoroughgoing subjectivism, methodological individualism, ontological individualism, apriorism, essentialism, an often overstated rejection of formal methods, and alertness to economic semantics.

Keywords: Austrian economics, methodology, subjectivism, individualism, apriorism, praxeology, essentialism, formal methods, economic semantics.

JEL Codes: B13, B25, B40, B53, C18

Funding: Work on this article was partly funded by the Austrian Academy of Sciences.

Acknowledgements: I am grateful to Theo Anders, Brecht Arnaert, Erwin Dekker, David Gordon, Conrad Heilmann, Marek Hudik, Uskali Mäki, Karl Milford, Julian Reiss, Scott Scheall, and Rahim Taghizadegan for their valuable recommendations on previous drafts and to Reinhard Schumacher for our exchange on Karl Menger.

Center for the History of Political Economy Working Papers are the opinions of their authors and do not necessarily reflect the views of the Center or of Duke University.

¹ The abridged article “Philosophy of Austrian Economics” (Linsbichler 2021e) differs slightly.

1 Precip: What was and is the Austrian School?

Carl Menger's *Principles of Economics* (1871/2004) is usually regarded as the founding document of the Austrian (or Viennese) School of economics.² In the early phase around 1900, international dissemination and further advancement of the new economic and methodological ideas were for the most part due to Böhm-Bawerk and Wieser. In the 1930s, when Mises, Hayek, Machlup, Morgenstern, Haberler, and most other representatives of Austrian economics emigrated from Vienna, the School's center began to shift to the USA. There, Kirzner, Lachmann, Rothbard, Lavoie, Boettke, and many others have contributed to the further development and "revival" of Austrian (or Neo-Austrian) economics.³ Throughout the one and a half centuries of the Austrian School's existence, its position relative to the mainstream as well as the School's internal diversifications have changed considerably several times. Still, there are some (nearly consensual) demarcating traits of the Austrian School from Menger up to contemporary Neo-Austrians. Among them are methodological individualism, relatively thoroughgoing subjectivism, an emphasis on the signalling function of market prices and price changes, on the processual character of many relevant social phenomena, on entrepreneurial discovery, and on the heterogeneity of the capital structure.⁴

² For a relativization of Menger's departure from the German Historical School, see Streissler (1990).

³ The conference documented in Dolan (1976) is often mentioned as a springboard for the School's "revival".

⁴ For an outline of ten central features of the Neo-Austrian School, see Boettke (2010). Medium-length introductions to Austrian economics are Holcombe (2014) and Kirzner (1960/1976, pp. 146-185), the latter with a focus on foundational questions. The most popular introductory textbook is Heyne, Boettke, Prychitko (2013); Schulak & Unterköfler (2011) and Linsbichler (2021g) provide historically oriented introductions to the Austrian School for non-economists. More extensive takes on Austrian methodology and epistemology can be found in Martin (2015) and, focusing on the Misesian and Hayekian branch respectively, in Linsbichler (2017) and Caldwell (2004).

Austrian methodological, epistemological, and economic positions tend to instil scepticism towards precise quantitative predictability (see also Megger 2021 for the questions of determinism and free will). Rough “pattern predictions” and “explanations of the principle” are attainable even for complex phenomena, though (see e.g. Hayek 1952, 1955, 1967; Scheall 2015a). Since epistemological modesty reinforces a humble attitude regarding the malleability of social institutions as well, many Austrian economists are paragons of the “constrained vision” (Sowell 1987/2007). Coherently, Dekker (2016a, 2020) characterizes the Austrian economists’ role in society as humanist, accepting “students of civilization”. As this label indicates, Austrian economics at its best incorporates institutional, political, sociological, psychological, and cultural considerations as well as legal theory: “nobody can be a great economist who is only an economist – and I am even tempted to add that the economist who is only an economist is likely to become a nuisance if not a positive danger” (Hayek 1956/1967, p. 123; see also Mises 1962, pp. 3-4). Given this broad, inclusive conception of the discipline, perhaps Austrian economics should rather be called Austrian political economy.

2 Omissions and Outlooks

Many stated characteristics of Austrian economics have a philosophical or methodological component. In eight sections, we will briefly discuss some of them individually and hint at further readings: Austrian action theory and interpretative understanding, subjectivism, methodological individualism, ontological individualism, apriorism, essentialism, formal methods, and economic semantics.⁵

⁵ For comparison, Nozick’s (1977) classic philosophical critique of Austrian methodology picked out four tenets: methodological individualism, apriorism, Austrian theories of human action and demonstrated

Various other approaches to the “philosophy of Austrian economics” would certainly have been possible. Inter alia, this article does not discuss the Methodenstreit or the influence of prominent philosophers on Austrian economics. Aristotle, Kant, and M. Weber are often mentioned; B. Smith (1994) accents Brentano’s influence on Menger; and Mach’s influence on at least Wieser and Hayek tends to be underappreciated. Neither do we review the extensive literature on the relationship between Hayek and Popper nor the influence of the specific cultural milieu of *fin de siècle* Vienna and of Viennese Late Enlightenment on the development of the Austrian School (see Dekker 2016b).

Except for a few remarks, we do not touch upon the political philosophy, social philosophy, or historical, legal, and ethical treatises of Austrian economists either.⁶ We treat Austrian economics as a scientific research program with a certain methodology, theories, and research interests. Although many Austrian economists have published on political philosophy, often advocating an array of libertarian positions ranging from anarcho-capitalism to classical liberalism in the vein of Locke, A. Smith, Bastiat, and Mill, we treat Austrian economics as in principle independent from any political position.⁷ Indeed, an aspiration for value-free economics features prominently in the writings of many Austrians. Note that the possibility of value-free economics is independent of the debate whether objective value statements are possible. Not only scholars in Mises’ ethical non-cognitivist

preference, and finally Austrian theories of time-preference. See Block (1980) for an Austrian reply to Nozick.

⁶ See e.g. Cubbedu (1993), Raico (2012), Kolev (2017), Stringham (2007), Zywicki, Boettke (2017) for some of that.

⁷ In the first half of the 20th century, political positions in the Austrian School were more diverse than today.

When W. Weber wrote a synoptic view of Austrian economics and economic policy before the rise of Neo-Austrian economics in the USA, he considered “Manchester liberalism” a personal attitude of Mises, but not a characteristic of most Austrian economists, let alone a conclusion based on scientific findings of the Austrian School (Weber 1949, p. 30). See also Boettke (1995).

and subjectivist consequentialist tradition uphold value-free economics and insist that economic theory never implies policy recommendations without the apposition of at least very broad value judgements such as favouring peace over war, prosperity over poverty, and more opportunities over fewer. Just like Misesians, Rothbardians, although they believe to have discovered and ultimately established the correct natural laws of ethics (Rothbard 1982/1998), also recognize that the economist qua economist “cannot advocate any course of action. As a citizen, however, he may, along with other citizens, try to decide upon the proper course of social policy” and use economic theory in those deliberations (Rothbard 1951, p. 946).⁸

Lastly, while the article identifies several disagreements among Austrian economists, we do not provide a detailed discussion of the perceived main institutional bifurcation in the Neo-Austrian School between a Mises-Rothbard branch and a Mises-Hayek-Kirzner branch. First impressions of that split are given on the one hand by Salerno (1993, 2002) who emphasizes perceived differences between Mises and Hayek and champions Mises; and on the other hand by Yeager (1994) and Horwitz (2004) who downplay such differences and support Boettke’s dictum that “the best reading of Mises is a Hayekian one and the best reading of Hayek is a Misesian one” (quoted in Horwitz 2004, p. 308).⁹

⁸ That is not to say that Austrian economists always succeed in separating science and ideology. See e.g. Streissler (1986) for a critique of Wieser’s mingling of value-judgements and scientific theory. Apart from academic research in the Austrian tradition, recent decades have brought forth a popularization of some ideas of the Austrian School and their dissemination into public discourse. Such popularizations naturally face dangers of oversimplification and instances of conflation of economic theorizing and political propaganda.

⁹ For an external perspective on the development of the competing branches of Austrian economics in the United States, see Wasserman (2016; 2019, pp. 233-269).

3 Understanding Action, the Austrian Way

Acting individuals in Austrian economics are conceived as active, creative problem-solvers, whose knowledge is incomplete. Lachmann even urges economics to consider that knowledge is often lacking altogether (“radical uncertainty”). In any case, for Austrians, knowledge is dispersed among agents, contains an interpretative element, and actors can commit errors in their reasoning, their interpretations, and their choices.¹⁰

Choices and decisions are a crucial element of Austrian economics. Ideally however, oftentimes “the analytical unit is not the act of choice within a given ends-means framework. [... T]he unit of analysis is human action, a concept that includes the identification of the very ends-means framework within which efficient decision making must be exercised. [... T]he verb ‘to act’ includes not only effective exploitation of all perceived net opportunities for gain, but also the discovery of those opportunities” (Kirzner 2001, pp. 86-87). Thus, agents are not only potentially ignorant about the value of some variables; they might even err by neglecting a relevant factor or failing to picture an option altogether. Consequently, agents can encounter real surprises and market opportunities can remain undiscovered for a while. Accordingly, Austrian economics has been labelled the “economics of ignorance and coordination” (Aimar 2009) and the “economics of [real Bergsonian] time and ignorance” (O’Driscoll & Rizzo 2015).

The Austrian demonstrated preference approach closely resembles the well-known revealed preference approach, but Austrians presume to be more attentive to a necessary interpretative element. Strictly speaking, all that observation and economic theory yield is: *if*

¹⁰ This makes rationality research a potential ally of Austrian economics (see e.g. Cevolani 2011). In contrast to many approaches in behavioural economics, however, Austrian economists tend to question not only the empirical adequacy of expected utility theory, but also its normative appeal.

the observed behaviour is an action, then the acting individual prefers something to something else in that moment. Observations and economic theory are insufficient to tackle questions like: Is the observed behaviour an action? What is preferred to what? Can we reasonably assume some constancy of that preference? Declarations of acting individuals about their motives cannot serve as trustworthy final answers, as Machlup (1969) wittily elucidates. To be sure, self-descriptions can serve indirectly as useful knowledge and can become the object of subsequent explanations themselves. The primary “method” for arriving at conjectures about the subjective preferences, beliefs, and meaning assignments of acting individuals, however, remains interpretative understanding (*Verstehen*).¹¹

Since meaning assignments of market participants play a central role in Austrian economics, so does interpretative understanding. Based on economic theory and observation exclusively, we would be clueless whether Romeo preferred suicide to eloping with Juliet, whether Amartya preferred the small apple to the big or preferred following the social norms of politeness to appearing greedy, whether a mother saving one of her two daughters from drowning preferred Venus to Serena or rather preferred one saved child to saving none,¹² and whether Bobby lost the ball game due to his poor strategic choices or succeeded in achieving his secret goal of losing the game.

On a final note regarding Austrian action theory, the ultra-thin conception of rationality in Austrian economics is a noteworthy difference to most other conceptions of rational action in economics and philosophy. For most Austrian economists, action is by

¹¹ By trying to refine and extend the interpretative components of (Austrian) economics, Lavoie (1985/2011) initiated the “hermeneutics debate” within the Austrian School (see also Gordon 1986, Lavoie 1990, Harris 2016).

¹² See B. O’Neill (2010) for an entertaining, more extreme example for the importance of framing the choice situation.

definition rational, i.e. any purposeful employment of means to achieve chosen ends which is subject to some form of evaluation merits the label “rational”. Consequently, descriptions of actions as rational or irrational are rare in Austrian economics (see e.g. Pham 2017, Linsbichler 2021a, 2021d).

As an outlook to the sections below, if the “facts of the [Austrian] social sciences are what people believe and think” (Storr 2010), then methodological individualism and subjectivism are congenial to Austrian methodology.

4 Subjectivism

In order to explain exchange, relative prices, or indeed almost anything in economics, economists require a theory of value; i.e. an explication of the concept of value and a theory about the principles according to which individuals value goods and services¹³.

Objective value theories hold that goods can be and in fact are evaluated according to some objective standard. Typically, this standard is something intrinsic to goods, for instance the “socially necessary hours of labour” (Marx). The more hours it takes to produce the good, the more valuable it is. As one alternative objective standard, labour command theories maintain that individuals value goods according to the hours of labour the good will command in exchange. Anyhow, according to objective value theories, people exchange goods of equal value and the relative prices of goods reflect their relative objective values.

By contrast but encompassing objective value theories as a very special case, subjective theories of value hold that people value goods and services according to their (subjective) beliefs whether these goods and services will satisfy their subjective preferences. Since today almost all economists maintain a subjective theory of value of some

¹³ In the nomenclature of subjective theories of evaluation, it is only the evaluation of individuals which renders a physical thing a good and a certain behaviour a service.

sort, subjectivism *prima facie* ceased to suffice as an informative distinguishing characteristic of Austrian economics.¹⁴ Having said that, there are several layers of how subjective one's value theory is, and Austrian economists tend to champion more thoroughgoing versions of subjectivism.¹⁵ Congruously, Hayek contends "that every important advance in economic theory during the last hundred years was a further step in the consistent application of subjectivism" (1952/1964, p. 31).

There are trends in the history of Austrian economics towards more thoroughgoing subjectivism. Menger's subjective theory is applicable to goods (including works of art and money), services, labour, and hence facilitates a uniform theory of relative prices. However, Menger's value theory still retains several objective features. For instance, he speaks of "human needs" instead of preferences or wants. Moreover, in order to be a good in Menger's sense, not only is a physical thing required to be believed to satisfy a need, but the physical thing must also (objectively) have the property of being able to causally contribute to the satisfaction of the need. Otherwise, Menger (1871/2004, pp. 51-55) speaks of an "imagined good". Finally, Menger focused on the subjective evaluations of consumers and only Wieser developed the Austrian theory of opportunity costs, thereby extending subjectivism to production. Later, Wieser was reproached by Mises: "[Wieser] never really grasped the core of subjectivism, a limitation that caused him to make many unfortunate mistakes" (Mises 1940/2009, p. 28). Subsequently, although Mises' "consistent development of the subjectivist approach [...] has for a long time moved ahead of his contemporaries" (Hayek

¹⁴ Sometimes "subjective value theory" and "marginal value theory" are used synonymously. This is unfortunate since, e.g. in the German Historical School, there are subjective value theories which are not marginalist (or marginal utility is treated psychologically) and hence can only yield reservational price theories. For subjective value theories before Menger, see Priddat (1997), Milford (2012), and Oakley (1997). See also Ikeda, Yagi (2012).

¹⁵ See Stringham (2010) for an excellent breakdown of ten layers of subjectivism.

1952/1964, p. 210), some of Mises' arguments in monopoly theory (see Costea 2003) and in the calculation debates (see Nemeth 1999, Uebel 2019) have been accused of assumptions untenable from Mises' own subjectivist stance. In some respects, Lachmann represents the pinnacle of subjectivity in the tradition of the Austrian School.¹⁶ Particularly, Lachmann emphasizes that learning from past experience involves an inextricable interpretative element and, more drastically, under the prevailing conditions of radical uncertainty, even if actors learn anything from the past, they only learn something about the past, not about the future. Consequently, not only evaluations but also expectations are entirely subjective. The implications for economic theory are immense. Examples include subjectivist challenges to the existence of equilibrating tendencies and subjectivist capital theory. Pursuing Lachmann's approach, Garzarelli and Kuchar (2018) suggest that "a consistently subjectivist theory of capital does not depend on the physical character of capital goods [...] what matters for a good to become capital is what an individual, such as an entrepreneur, imagines can be done with it".

Other layers of subjectivity are particularly relevant for welfare economics. Most Austrian economists object to quantifying utility and are wary of the constant preferences assumption. Most Austrian criticisms of the assumption of transitivity of preferences should rather be interpreted as criticism on the assumption of constancy as well. (Hudik 2012) Furthermore, thoroughgoing subjectivism combined with ordinal utility denies the possibility of interpersonal utility comparisons, intertemporal utility comparisons, and aggregation of utilities of several individuals, thereby severely restricting the possibility of

¹⁶ For Lachmann and his position at the boundary of the Austrian School, see Lachmann (1977), Storr (2017), and Fiorito, Scheall, Suprinyak (2019). Brecht (2020) proposes to extend the "subjectivist revolution" even further.

welfare economics.¹⁷ Stringham (2010) discusses proxies to stand in for utility as a magnitude for welfare assessments: monetary income, migration patterns, and willingness to pay as estimated in cost-benefit-analysis do not pass the test of thoroughgoing subjectivism.¹⁸

Systematically subjectivist Austrian economists accept only limited access to an actor's preferences: demonstrated preference. Without the constant preferences assumption, preferences are however only demonstrated for one point in time. The ensuing welfare economics, based on thoroughgoing subjectivism and on the implicit assumption of property rights, is mostly "negative" in the sense that "[e]ach involuntary act of acquisition or interaction is Pareto Inferior. [...] the free market achieves the greatest social utility possible of any economic system. [Rothbard's (1956/1997)] achievement is no less than a rigorous proof [...] that the free market, without qualification, maximizes social welfare." (Herbener 1997, p. 106) Note that the "social utility" in that assessment is a technical term purely based on individually demonstrated preferences. It is a separate discussion whether interventionism and income redistribution are to be endorsed on other, non-(Austrian-)economic grounds.

¹⁷ See Hamlin (1992) and Sugden (1992) for a discussion of the possibility of Austrian welfare economics and strong similarities to the approach of the Virginia School of political economy. Gordon (1993) meticulously criticizes less consequently subjectivist fellow Austrians' welfare economics.

¹⁸ Wieser (1889/1993) aims at an identification of social value and money price but is well aware of and discusses a fundamental problem: such an identification rests, among other things, on the false assumption of equal purchasing power of all market participants. Wieser was heavily criticized by Mises (1949/1998, p. 205) for a tendency to equate objective money prices with subjective value. Given Mises's own concessions that money prices reflect social value modulo purchasing power at best, Linsbichler (2021a, 2021d) surmises that some of his unconditional propositions in the calculation debates ought to be qualified more carefully.

5 Methodological Individualism

The term “methodological individualism” was coined by Schumpeter (1908/1980) and the origin of the concept is often ascribed to M. Weber, two scholars in close contact with Austrian economists. Methodological individualism is a doctrine regarding explanations. It rejects organic conceptions of social organizations and, in its strictest form, methodological individualism requires satisfactory explanations in the social sciences to explain social phenomena as the *unintended* outcome of intended individual actions (see e.g. Menger 1883/1985, pp. 127-159; Hayek 1946/1948; 1973/1998, pp. 35-54).

Milford (2010) argues that it is precisely the combination of strict methodological individualism, a theory of subjective evaluations, and the equimarginal principle that constitutes the innovative core of Menger’s research program.¹⁹ A simple example of a social phenomenon is exchange. In a theory of objective evaluations, goods and services of equivalent value are exchanged, so in order to explain why some exchanges happen and others do not, a psychological motive such as A. Smith’s “propensity to truck, barter and exchange one thing for another” (1776/1976, p. 29) needs to be invoked.²⁰ People exchange because they have the propensity to exchange. Although the explanandum might perhaps be true, such question-begging explanations could be given ad hoc for any social phenomenon and are not very instructive.²¹ Moreover, this account leaves unexplained “why the two

¹⁹ Milford (1997, 2008) identifies Hufeland as a precursor of Menger and Hayek, combining methodological individualism and a subjective theory of evaluations. Hufeland however lacks the equimarginal principle. Whereas neoclassical economists obtain the equimarginal principle as a result of linear optimization, Menger asserts it can be established as the result of observation (Milford 2012).

²⁰ Similarly, A. Smith draws on “sympathy” and authors of the German Historical School draw on “Gemeinsinn” (“community spirit”) in order to explain the peaceful stability of social institutions.

²¹ If people exchange because they intend to exchange, the real question becomes why people have these intentions. Subsequently, the research program becomes psychological, historical, and sociological. Thus, methodological individualism is also a strategy to secure the autonomy of economics (or other

participants should not be willing to reverse the trade immediately” (Menger 1871/2004, p. 193). In contrast, a theory of subjective evaluations allows for an explanation of exchange as an *unintended* consequence. Say, Eve owns an orange and prefers apples to oranges; Francis owns an apple and prefers oranges to apples; and assume both Eve and Francis consciously recognize the opportunity to improve their preference satisfaction by an exchange. Then an exchange between Eve and Francis can be explained without recourse to an initial intention to exchange. Similarly, Hayek (1952/1964, pp. 40-41) explains the emergence of a trail through a thicket: the only relevant goal of an individual is to pass through the thicket with the least possible effort. Thus, she chooses a route already somewhat trampled down, thereby further contributing to the emergence of a path – without intending to do so.

As a more sophisticated example, Menger (1871/2004) explains the emergence of money as an unintended outcome of intended individual actions – or, in Ferguson’s and Hayek’s words, “as product of human action but not the execution of any human design” (Ferguson 1767, p. 205). Note that Menger’s theory does not preclude the possibility that some or even all “moneys” in economic history are a product of human design, e.g. of state design. Methodological individualism does not preclude the possibility of social institutions that are consciously designed. In such cases, the main task of the methodological individualist social scientist is to uncover and explain unintended side effects (see e.g. Bylund 2016).

Other possibly illuminating examples are Austrian explanations of the business cycle and of the emergence and stability of a market order. From a strict methodological individualist perspective, Hayek improves upon Mises insofar as Hayek explains the

social sciences) from psychology, history, and sociology. This is very much in line with the de-psychologizing tendencies of some Austrian economists.

business cycle without taking recourse to selfish intentions of central bankers or politicians as a factor contributing to booms and busts and Mises does not. Similarly, Hayek improves upon Rothbard insofar as the latter employs a psychological hypothesis about the market participants' endorsement of the market order to explain its emergence and stability and Hayek does not (see Long 2010, pp. 54-56).

The strict version of methodological individualism discussed so far plays an eminent role in the writings of Menger, Hayek, and many other Austrian economists (see also Neck 2019). Moreover, almost all Austrian economists at least proclaim to adhere to a weaker version of methodological individualism.²² This weaker version only requires social phenomena to be explained as a result of individual action, no matter whether the result is intended or unintended. For instance, Ebeling's assessment that "Mises insisted upon a strict adherence to methodological individualism" (1990, p. xvi) is only accurate with respect to the weaker version of methodological individualism. Both forms of methodological individualism in effect require microfoundations and considerably restrict the scope of Austrian macroeconomics.²³

6 Other Individualisms

Many Austrian economists also champion political individualism (i) and ontological individualism (ii). They hold (i) that the primary objective of policy ought to be the individuals' rights, well-being, opportunities, or freedoms; and against organic conceptions

²² Some implicit aggregations are debatable, and one could question strongly whether representative agents qualify for methodological individualism.

²³ The details of the restriction of macroeconomics are controversial within the Austrian School. For instance, the most prominent representative of Neo-Austrian macroeconomics (Garrison 2001) is contested from within the Austrian School (Hülsmann 2001). See also Wagner (2005, 2020), Horwitz (2000), Cowen (1998).

of social organizations, they hold (ii) that ultimately only human individuals exist, act, and are causally relevant in the social sphere, whereas social collectives such as nations, classes, sports clubs, and universities exist, act, think, and are causally relevant only through their constitutive individuals. Ontological individualism does not “deny that nations, states, municipalities, parties, religious communities, are real factors determining the course of human events” (Mises 1949/1998, p. 42). It merely insists that, regardless of whether one can really miss to see the forest for the trees, one can never see a forest without trees (Mises 1940, p. 33).

Kaufmann (1929), who was closely associated with the Austrian School, admonished against blurring the distinction between logical-ontological, empirical²⁴, methodological, and axiological-political individualism. Nevertheless, the term “methodological individualism” is regularly employed for political or ontological positions until today. Endorsing methodological individualism might be unusual for socialists and fascists; conversely, few liberals and libertarians endorse methodological collectivism or holism. These correlations are, however, psychologically or sociologically induced. Logically, methodological individualism and political individualism are independent.

As for the more intricate relation between ontological individualism and methodological individualism, there is an argument, widely propagated not only by some Austrian economists, stating that ontological individualism necessitates methodological individualism: if only individuals exist, think, act, and are causally relevant for social phenomena, then explanations of social phenomena (ideally) ought to start with individuals.

²⁴ As one example of a (broadly conceived) empirical problem: against accusations of “atomism”, most Austrian economists by no means deny that the human mind may have an irreducibly social dimension. They are like M. Weber but unlike Hobbes “sophisticated methodological individualists” (Heath 2014). See also Di Iorio (2015).

Against this argument, Menger (1883/1985, pp. 50–53) can be interpreted as rejecting any inference from the purported ontological structure of the universe to a specific methodological or epistemological position as committing a category mistake.²⁵ According to this reading of Menger (and since the reverse is trivial), methodological individualism and ontological individualism are logically independent too.

7 Apriorism

One characteristic of Austrian economics is the openly aprioristic character of at least parts of economic theory; i.e. for the truth values of at least some parts of economic theory, experience is not considered a critical standard: some sentences of the theory are not to be tested, verified, falsified, confirmed, or corroborated by empirical means.

Extreme forms of apriorism are considered untenable in the light of modern philosophy of science. Consequently, the Austrian School's putatively extreme apriorism and alleged neglect of empirical work faces harsh criticism by economists and philosophers alike. Scheall (2017a) as well as Zanotti and Cachanosky (2015) demur that untenable extreme apriorism has sometimes been invoked as a pretense to dismiss other ideas of Austrian economists *tout court*, perhaps too hastily on occasion. In fact, the extremeness of apriorism considerably varies between different branches of Austrian economics and the exact nature of the apriorism of many prominent Austrian economists is subject to ongoing exegetical debates.²⁶ Scheall (2017a) proposes a more fine-grained analysis to clarify these debates and assesses the extremeness of an aprioristic position along three different

²⁵ More recently, Blaug (1992/2006, p. 45) concurs by declaring ontological individualism to be “trivially true” but denies any necessary implication for methodology.

²⁶ See e.g. Caldwell 2009; Linsbichler 2017, 2021c, 2021f; Scheall 2015b, 2017a; Tokumaru 2018; Zanotti & Cachanosky 2015, 2017.

dimensions: (i) the extent of a priori knowledge, (ii) the kind of justification for a priori knowledge, (iii) the purported certainty of a priori knowledge. As a tentative and rough result, we might array representatives of branches of Austrian economics in decreasing extremeness of apriorism as follows: Hoppe > Rothbard >> Mises >> Menger >> Hayek > Machlup > Lachmann.

However, even for Rothbard, who embraces extreme apriorism (1957), and for Mises, whose method was labelled “perhaps the most anti-positivist and anti-empiricist approach to social science ever stated” (Milonakis and Fine 2009, p. 259), the extent of apriorism (i) is far narrower than many popular expositions of Austrian economics suggest. Even for the extreme apriorists Rothbard and Mises, the only a priori true part of economic theory is everything deducible from the fundamental axiom “Man acts”, i.e. *human individuals and only human individuals choose ends and employ means they consider suitable to attain these ends*.²⁷ Auxiliary axioms like the disutility of labour are not a priori and neither are the sentences describing the value judgements, preferences, meaning assignments, and subjective beliefs of the acting individuals. Such empirical sentences are indispensable for each situational analysis and for each Austrian explanation and prediction. (Linsbichler 2017, pp. 52-55; Mises 1957/2005; Mäki 1990b) Paraphrasing Kant and Hansen, Roderick Long (2010, p. 50) trenchantly encapsulates that even most extreme apriorists acknowledge an interdependency of aprioristic components (“praxeology” in the

²⁷ The term “fundamental axiom” was coined by Rothbard. Yet, considering the pivotal role of truth and of deduction for Mises and for virtually all praxeologists, we are compelled to reconstruct Mises as postulating an axiomatic basis for praxeology. If he merely meant to delimit a realm of study as some of his formulations seem to imply (see e.g. Bylund 2021), we would run into interpretational and practical problems: First, we can attribute truth values to praxeological sentences, but not to delimitations of research areas. Second, axioms (or other sentences) are required to apply rules of deductive inference.

Mises-Rothbard branch of Austrian economics) and empirical components (“thymology”):
“Praxeology without thymology is empty; thymology without praxeology is blind”.

While the extent (i) refers to the content of praxeology, the two remaining dimensions of extremeness refer to the epistemological status of the praxeological statements. As for the kind of justification (ii) of a priori truth, the epistemological status most frequently attributed to the fundamental axiom is that of a synthetic a priori in a Kantian tradition. Other construals of the a priori parts of Austrian economics include the following: Rothbard (see e.g. 1973/1997) invokes a specific form of inner experience that guarantees the truth of the fundamental axiom. According to Hoppe (1995), the justification for the synthetic a priori of praxeology improves upon Kant.²⁸ Some of Mises’s and Hayek’s ideas about evolutionary effects on the human mind could be (mis-)interpreted as unsuccessfully trying to provide justification for aprioristic elements of the theory (see e.g. Mises 1962 and Hayek 1988). However, even if these arguments successfully established that for evolutionary reasons the human mind cannot avoid having certain beliefs, this result would only establish a genetic or psychological a priori and not a priori truth as required. Even if an individual could not avoid having certain empirical expectations, these expectations could still be disappointed.

Recent attempts to render some elements of Austrian economics a priori include Long’s (2004, 2008, 2010) ingenious appropriation of Wittgenstein’s philosophy of language and Frege’s Platonism for a reformulation and defence of praxeology; an attempted vindication of Mises with a strong pragmatist flavour (Leeson, Boettke 2006); the *Hamburger Deutung* (see e.g. Puster 2014, Oliva Cordoba 2017) interprets the a priori

²⁸ Hoppe’s argumentation ethics also claims to prove the a priori validity of the non-aggression principle and by implication of anarcho-capitalism. See e.g. Murphy & Callahan (2006) for a summary of and counterarguments to Hoppe’s position.

elements as analytic, i.e. true in virtue of meaning. Withal, conceptual analysis in the spirit of the *Hamburger Deutung* seems to deny the dependence of intersubjective concepts on language. Consequently, its ultimate aim is not the explication of expedient terminological conventions but the discovery and establishment of allegedly unique, correct concepts such as *the* concept of action. Like the *Hamburger Deutung*, Linsbichler (2017, 2021c, 2021f) proposes to construe the a priori parts of Austrian economics as analytic instead of synthetic but he advocates conventionalism regarding the “ultra-refined grammar” (Hutchison 1998, p. 68) of economics and other linguistic rules.²⁹

8 Realism, Essentialism, and All That

Labels that are often attributed and self-attributed to Austrian economics are “realism”, “anti-instrumentalism”, “realisticness”, and “essentialism”. All four terms are sufficiently ambiguous to impair ensuing discussions severely. Mäki disentangles many terminological and conceptual confusions and argues that realism and anti-instrumentalism are appropriate philosophical positions for Austrian process theories of the market – despite their isolative character (Mäki 1990a, 1990b, 1992).

Qua realist, the typical Austrian economist claims that all terms postulated by her theory (including theoretical terms such as “goal”, “preference”, “knowledge”) do refer to existing entities. The scientific realism of the Austrian School is often portrayed as continuous with laypeople’s life-world realism. Phenomenologist Kaufmann (Cohen & Helling 2014; Linsbichler 2019; Linsbichler & Taghizadegan 2019a, 2019b), sociologists Schütz (Kurrild-Klitgaard 2001, 2003), and subsequently via Schütz perhaps even social

²⁹ See also Lipski (2021), who suggests to reform praxeology by adding empirical content to the fundamental axiom to obtain a directly testable hypothesis, thereby dropping the aprioricity essential to Mises and most of his followers.

constructivists Berger and Luckmann were strongly influenced by interpretative aspects of Austrian economics after all.

Qua “anti-instrumentalist”, all sentences of the typical³⁰ Austrian theory have truth values and theories aim to give a truthful picture of what the world (including the unobservables) is like, instead of merely serving as useful instruments, and only as instruments, for whatever purposes there may be. For instance, Mäki (1997, p. 477) argues that “what Menger calls exact types in economics can be interpreted as complex universals in the immanent realist sense, and what he calls exact laws are relations between these universals”.

As for realisticness, Austrian economists’ criticisms of idealizations (precise abstractions) in economic theories and models are indeed ubiquitous.³¹ In all theories and models that aim to describe or explain the world, Austrians reject idealizations and assumptions known to be false. (Long 2006)³² By contrast, (non-precise) abstractions are permitted and prominent in Austrian economics (and indeed unavoidable for almost any theory in empirical science); i.e. if certain criteria are deemed irrelevant in a context, they can be left unspecified. Unfortunately, idealizations and abstractions are not always neatly

³⁰ Schumpeter’s instrumentalism (Shionoya 2005; Milford, Cerman 2011) is one of the reasons for not considering him a full member of the Austrian School.

³¹ Hülsmann’s claim that the Austrian School “has consistently adhered to the postulate of [realisticness]” (1999, p. 3) might be only slightly overstated. See Caplan (1999, 2001) for objections.

³² It is underappreciated how eminent idealizing assumptions and unrealistic models feature in Austrian economics, notably the use of Robinsonades made famous by Wieser and the use of “imaginary constructions” in thought experiments: “The use of imaginary constructions to which nothing corresponds in reality is an indispensable tool of thinking. [...] But one of the most important problems of science is to avoid the fallacies which ill-considered employment of such constructions can entail” (Mises 1949/1998, pp. 202-203). The main purpose of these unrealistic models, however, is not to describe and explain the world but to highlight contradictions or to indicate hypotheses. (Cunha, Linsbichler 2020) For Wieser’s thought experiments, see also Tokumaru (2016).

distinguished. Not all formulations of economic theories explicitly specify whether they assert that, say a public sector, is actually absent or is negligible and thus left unspecified or whether the theory's domain is restricted to cases without a public sector.

Due to diverging conceptions of 'realism', the question whether and in what sense Austrian economics is essentialist is perhaps even more convoluted than the question of realism, as for instance the ongoing debates whether Menger was an essentialist or an anti-essentialist indicate (see e.g. contributions in Campagnolo & Haltmayer 2008). Here, we can only provide a rough disambiguation of a few simplified forms of essentialism and sketch some appraisals whether and in what sense Austrian economics is essentialist.

A very mild form of essentialism coincides with the conjunction of realism and anti-instrumentalism. J. O'Neill (1995) characterizes (Hayekian) Austrian economics as Aristotelian essentialist by focusing on the dispositional character of many purported properties of the market. O'Neill convincingly exhibits that many attacks on essentialism misfire because they target much stronger versions of essentialism which few scholars in fact defend. However, like most others', O'Neill's characterization that the "essential properties of an entity of a particular kind are those properties of the object that it must have if it is to be an object of that kind" (O'Neill 1995, p. 159) bypasses the crucial question whether having an essential property is just an analytic truth and if not, how to distinguish between essential and accidental properties.

Stronger versions of Aristotelian essentialism were explicated and criticized by Popper (1960/2000).³³ Essentialism as defined by Popper holds that ultimate explanations of appearances in terms of the underlying essences should be searched for and can be found.

³³ Popper's "criticism of essentialism does not aim at establishing the nonexistence of essences" (1960/2000, p. 105). Indeed, Popper endorses realism and anti-instrumentalism, i.e. mild essentialism. He even accepted the label "modified essentialism" for his view, albeit grudgingly. (Popper 1957/1972)

Such ultimate explanations can be established with certainty or beyond any reasonable doubt and are neither in need nor capable of further explanation. To Mäki “[i]t is obvious that some Austrian economists – most notably von Mises – accept [essentialism as defined by Popper]” (1990b, p. 339).³⁴ B. Smith (1990, 1996) by and large characterizes all of Austrian economics as essentialist in that sense, except for his attempt to integrate fallibilism with essentialism and apriorism. Milford’s (1990, 2008, 2010, 2015) appraisal of essentialism in the Austrian School slightly dissents from these influential views: he admits and underlines that in the interwar period, strongly essentialist positions as exemplified by Spann, Degenfeld-Schonburg, and the Austrian economists Wieser and Mayer indeed dominated economics at the University of Vienna. However, according to Milford, the branch of Austrian economics represented by Menger, Böhm-Bawerk, Mises, Haberler, Machlup, Hayek, Morgenstern, is, in our nomenclature, only mildly essentialist. Karl Menger rejects an interpretation of his father Carl Menger as a strong essentialist as well; Hayek seconds him (see Schumacher & Scheall 2020, Diskussion 1972).

On top of essentialism as defined by Popper, an even stronger version of essentialism states that via a specific form of intuition or introspection, we (or some genius economists) have infallible access to the truth about at least some essences. Rothbard (1976/1997, pp. 65-71) and Hoppe (1995) seem to defend this extreme essentialism regarding the essence of human action. While some of Mises’ remarks about introspection seem to hint in that direction as well, he harshly criticizes Spann for such overestimations of intuition and inner

³⁴ See also Mäki (1997) for realism and anti-instrumentalism, i.e. at least mild essentialism, in Menger’s methodology.

experience. (Mises 1933/2003, pp. 42-50; see also 1940, pp. 17-19; 1957/2005, p. 36, p. 110)³⁵

Strong versions of essentialism are not only relevant from an epistemological point of view but impact the kind of questions to be asked by economists. A strongly essentialist research program is often consumed by questions of origin, of historical development, and of the “essence” of concepts such as value or preference. Objective value theories are prone to be combined with essentialism. They invite to ask: by what physical process did the goods acquire their (objective) value? Or: what is the essential structure of human needs? The latter question is pursued by Wieser’s “psychologistic” research program. Wieser (1884, 1926/1983) heavily relies on introspection and on analysis of the alleged essences of value concepts in natural language.

By contrast, non-essentialist and mildly essentialist positions aim to find regularities and laws in the succession of phenomena. Mild essentialists add the postulate that such underlying laws governing both observable phenomena and unobservable entities do exist. Consider for instance Menger (1871/2004): even though he regularly speaks of the “Wesen” (“essence”), he maintains that just like the “goods-character is nothing inherent in goods and not a property of goods, but merely a relationship between certain things and men, the things obviously ceasing to be goods with the disappearance of the relationship” (p. 52), “value is [...] nothing inherent in goods, no property of them, nor an independent thing existing by itself. It is a judgment economizing men make” (pp. 120-121). Consequently, in order to

³⁵ See Schweinzer (2000) for a juxtaposition of Spann’s essentialist intuitive universalism and mildly essentialist branches of Austrian economics.

explain value, Menger's only mildly essentialist methodology aims to find laws and regularities governing the evaluating behaviour of individuals.³⁶

9 Formal Methods

Austrian economics is almost invariably portrayed as being sceptical or even hostile towards the use of formal methods, such as mathematics, statistics, and (modern) logic.³⁷ Indeed, classic tomes, contemporary journal publications, as well as textbooks in Austrian economics predominantly consist of plain text without models, formulas, or equations in mathematical terms.

There are several pragmatic reasons for the absence of formal methods in Austrian economics: (1) Some central topics of Austrian economic theory like meaning assignments, entrepreneurship, subjective interpretative knowledge, “radical uncertainty”, the time structure of production, discreet processes, and institutional considerations may be difficult to formalize at the current state of the development of formal methods and formalization techniques. Perhaps “altogether new mathematics has to be invented in order to cope with manifold forms of economic problems” (Morgenstern 1963, p. 3). (2) Formalization often (but not necessarily, as e.g. Klammer (1994) contends) involves simplifying assumptions and idealizations, which can clash with Austrian economists' pleas for realisticness. (3) Similarly, those econometric methods which comprise inductive inferences are problematic

³⁶ Many Austrian economists, contra some proponents of the German historical School, insist in the existence of universal laws in the social sciences. The manifold attempts to justify such laws invite a classification as specific solutions to the problem of induction (see Linsbichler 2017, Tokumaru 2009, but also Scheall 2017b).

³⁷ See e.g. Wutscher, Murphy & Block (2010) for a Neo-Austrian critique of mathematics and modern logic in economics, and K. Menger (1972) for a balanced analysis of potential benefits and pitfalls of formal methods in economics. Like K. Menger, Hudik (2015) and Linsbichler (2020b) explicitly suggest the compatibility of adequate formal methods and Austrian economics.

from an Austrian perspective since many Austrian economists hold inductive methods to be inapplicable outside the natural sciences. (4) Inasmuch as Austrian economics is more concerned with broad public outreach than with scientific progress in highly specialized research questions, plain natural language has its advantages over formal languages. These and other pragmatic considerations block many approaches which are inadequate from an Austrian perspective. However, they are not sufficient to reject formalization of (parts of) Austrian economics per se.

Still, over and above pragmatic considerations, a principled dismissal of any use of mathematics or modern logic is often ascribed to the Austrian School, expressly by many Neo-Austrian economists (see e.g. Jaffe 1976, p. 521; Rothbard 1952/2009, 1956/1997, 1976/1997; Boettke 1996). Rothbard (1976/1997) maintains that since individual human behaviour is imprecise, it should ideally be described by likewise imprecise natural language. Apart from this unconvincing contention, hardly any argument is given for a principled dismissal of all formal methods.³⁸ Backhouse (2000, p. 40) even discerns that “no Austrian, to my knowledge, has ever explained why mathematics cannot be used alongside natural-language explanations”.³⁹

³⁸ Rothbard (see e.g. 1973/1997) also claims that the functional relationships in mathematics are incapable of adequately dealing with cause and effect as involved in human action. However, various formal methods have been employed to elucidate and explicate the notion of causation employed in natural language.

³⁹ One potential argumentative resource against translations from natural language to formal languages could be obtained by Wieser’s (1884, 1926/1983) epistemological position according to which necessarily true knowledge about some phenomena is contained in the natural language of a people. Therefore, instead of studying these phenomena, “the scientific investigator is allowed to restrict herself to the analysis of language in order to determine the essential characteristics of a phenomenon” (Wieser 1884, p. 6, my translation). Given this most idiosyncratic epistemological position, arguments against translations from natural language into formal languages could be substantiated. Translations from one natural language into another turn out equally problematic though, which complies with Wieser’s

Indeed, otherwise cherished great names in the history of Austrian economics collaborated with mathematicians and mathematical economists.⁴⁰ Even though they rarely use formal methods themselves, Hayek (1952/1964) and Machlup (1991) speak highly of the prospects of (adequate) formal methods for (adequate) tasks in economics, and Mises (1936) praises K. Menger's formal paper (1936)⁴¹. With some reservations, (highly formal) modern game theory can be traced back and linked to Austrian economics too (see Morgenstern, von Neumann 1953, Leonard 2010, Streissler 2002).

Contrary to the received view, most economists in the history of the Austrian School do not reject formalization per se. Those Neo-Austrians who do, seem to rely on Wieser's most idiosyncratic philosophy of language and epistemology. In a related line of argument, T. Mayer (1998), himself an ardent critic of excessive formalism, blames Austrian economics for overstating its case against formal methods. While the benefits and pitfalls of formalization require continuous reflection by economists and philosophers, some parts of Austrian economics are presumably under-formalized at the moment. In particular, the praxeological Mises-Rothbard branch of Austrian economics emphasizes the role of logic and complete deductive proofs but has hitherto eschewed the aid of modern symbolic logic.

nationalistic tendencies. Ironically, Wieser's role in the Austrian School is not held in high regard by most of those Neo-Austrians who strongly object to formal methods in economics (see also Linsbichler 2020, 2021b).

⁴⁰ Already in the 19th century, Auspitz and Lieben (1889) utilize Austrian insights in their pioneering work in mathematical economics. Later, Alt, Kaufmann, Morgenstern, Schlesinger, Tintner, and Wald were all personally invited to Mises's private seminar and/or were employed by the Austrian Center for Business Cycle Research founded by Hayek and Mises. Moreover, mathematician K. Menger played a significant role in the publication of the second edition of his father's *Principles* (Becchio 2014), developed a decision theory ("logic") for ethical norms and social associations (1934/1974) – one of the first employments of formal models in the social sciences outside economics, and he conducted the *Mathematisches Kolloquium* which was attended by economists in the vicinity of the Austrian School.

⁴¹ Appropriately enough, it was Wieser's protégé H. Mayer who strongly advised against a publication.

The latter has proven to be extremely helpful in detecting gaps and hidden assumptions in proofs in other disciplines; and might do so in prospective praxeological investigations.⁴²

10 Economic Semantics and the Future of Austrian Economics

Finally, Machlup's project of *Economic Semantics* (1991) deserves a mention, since it can be located at the threshold of economics and philosophy. Machlup examines the history of economic thought in order to gather and analyse different definitions and meanings of one and the same term. Examples of ambiguous terms that caused economists to misunderstand each other include 'equilibrium', 'disequilibrium', 'marginal product', 'marginal utility', 'structural change', 'microeconomics', 'macroeconomics', 'rational', 'Say's Law', 'savings', 'balance of payments', 'neutral money', 'knowledge', 'methodology', and 'monopoly'.⁴³ According to Hayek's kindred conceptual analysis, the use of the term 'social' is meaningless in many contexts, famously including ramblings about 'social justice' (1957/1967, 1976). More recent progress in disambiguating and clarifying meanings of terms is submitted by Klein (2012). Depending on the explication of concepts like 'entrepreneur', 'entrepreneurial error', and 'coordination', disputed propositions about equilibrating tendencies of markets become analytically true or empirical hypotheses (see also Selgin 1990).

Lavoie (1985) and Boettke (1998) recognize a more general pattern of misunderstandings between Austrian economists and mainstream economists due to equivocations. If this babel can be further alleviated by economic semantics, if Austrian apriorism is not as extreme as it is sometimes made out to be, and if formal methods cease to

⁴² See Oliva Cordoba (2017) for a rare example of the application of formal logic in praxeology.

⁴³ In some cases, ambiguous terminology might not cause unnecessary confusion but trigger fruitful debates.

be an anathema for Austrian economists, then more and more productive communication between the Austrian School and competing research programs becomes possible.⁴⁴

Bibliography

- Aimar, T. (2009). *The Economics of Ignorance and Coordination. Subjectivism and the Austrian School of Economics*. Cheltenham: Edward Elgar.
- Arnaert, B. (2020). *In Defense of Extreme Subjectivism. The Case for a Paradoxical Foundation of Austrian Economics*. Unpublished manuscript.
- Auspitz, R., Lieben, R. (1889). *Untersuchungen über die Theorie des Preises*. Leipzig: Duncker & Humblot.
- Backhouse, R. (2000). Austrian Economics and the Mainstream: View from the Boundary. *The Quarterly Journal of Austrian Economics*, 3 (2), pp. 31-43.
- Becchio, G. (2014). Social Needs, Social Goods, and Human Associations in the Second Edition of Carl Menger's Principles. *History of Political Economy*, 46(2), pp. 247-264.
- Blaug, M. (1992/2006). *The Methodology of Economics: Or How Economists Explain*. Cambridge: Cambridge University Press.
- Block, W. (1980). On Robert Nozick's 'On Austrian Methodology'. *Inquiry*, 23, pp. 397-444.
- Boettke, P. J. (1995). Why are there no Austrian Socialists? Ideology, Science and the Austrian School. *Journal of the History of Economic Thought*, 17, 35-56.
- Boettke, P. J. (1996). What is Wrong with Neoclassical Economics (and What is Still Wrong with Austrian Economics). In F. Foldvary (Ed.), *Beyond Neoclassical Economics*. Cheltenham: Edward Elgar Publishing. Available at SSRN: <https://ssrn.com/abstract=1530995>
- Boettke (1998). Economic Calculation: The Austrian Contribution to Political Economy. *Advances in Austrian Economics*, 5, pp. 131-158.
- Boettke, P. J. (2010). Introduction. In P. J. Boettke (Ed.), *Handbook on Contemporary Austrian Economics* (pp. xi-xviii). Cheltenham, Northampton: Edward Elgar.
- Bylund, P. L. (2016). *The Seen, the Unseen, and the Unrealized: How Regulations Affect Our Everyday Lives*. Lexington: Lexington Books.
- Bylund, P. (2021). Review of Alexander Linsbichler, Was Ludwig von Mises a Conventionalist?, *The Review of Austrian Economics*, forthcoming.
- Caldwell, B. (2004). *Hayek's Challenge*. Chicago: The University of Chicago Press.
- Caldwell, B. (2009). A skirmish in the Popper Wars: Hutchison versus Caldwell on Hayek, Popper, Mises, and methodology. *Journal of Economic Methodology* 16 (3), pp. 315-324.
- Campagnolo, G. & Haltmayer, S. (Eds.) (2008). *Carl Menger. Discussed on the Basis of New Findings*. Frankfurt a. M.: Lang.
- Caplan, B. (1999). The Austrian search for realistic foundations. *Southern Economic Journal*, 65 (4), pp. 823-838.
- Caplan, B. (2001). Probability, common sense, and realism: A reply to Hülsmann and Block. *The Quarterly Journal of Austrian Economics*, 4 (2), pp. 69-86.
- Cohen, R., Helling, I., eds. (2014). *Felix Kaufmann's Theory and Method in the Social Sciences*. Cham: Springer.

⁴⁴ For overall optimistic assessments of the contemporary significance and the potential future of Austrian economics, see e.g. D'Amico and Martin (2019).

- Costea, D. (2003). A Critique of Mises's Theory of Monopoly Prices. *The Quarterly Journal of Austrian Economics*, 6 (3), pp. 47-62.
- Cowen, T. (1998). *Risk and Business Cycles: New and Old Austrian Perspectives*. London: Routledge .
- Cubeddu, Raimondo (1993). *The Philosophy of the Austrian School*. London, New York: Routledge.
- D'Amico, D., Martin, A., eds. (2019). *Assessing Austrian Economics. Advances in Austrian Economics, Vol. 24*. Bingley: Emerald.
- Dekker, E. (2016a). Left Luggage: Finding the Relevant Context of Austrian Economics. *The Review of Austrian Economics*, 29 (2), pp. 103-119.
- Dekker, E. (2016b). *The Viennese students of civilization: The meaning and context of Austrian economics reconsidered*. New York: Cambridge University Press.
- Dekker, E. (2020). On Emancipators, engineers, and students: The appropriate attitude of the economist. *The Review of Austrian Economics*, 33, pp. 55-68.
- Di Iorio, F. (2015). *Cognitive Autonomy and Methodological Individualism. The Interpretative Foundations of Social Life*. Cham: Springer.
- Diskussion. (1972). *Zeitschrift für Nationalökonomie*, 32(1), pp. 111-151.
- Dolan, E. (ed.) (1976). *The Foundations of Modern Austrian Economics*. Kansas City: Sheed & Ward.
- Ebeling, R. M. (1990). Introduction. In R. M. Ebeling (Ed.), *Money, Method, and the Market Process: Essays by Ludwig Von Mises* (pp. ix-xxvi). Auburn: Praxeology Press of the Ludwig von Mises Institute.
- Ferguson, A. (1767). *An Essay on the History of Civil Society*. London: Cadell, Creech, Bell.
- Fiorito, L., Scheall, S., Suprinyak, C. E. (Eds.) (2019). *Research in the History of Economic Thought and Methodology. Volume 37B. Including A Symposium on Ludwig Lachmann*. Bingley: Emerald Publishing.
- Garrison, R. W. (2001). *Time and Money: The Macroeconomics of Capital Structure. Foundations of the Market Economy*. London, New York: Routledge.
- Garzarelli, G., Kuchar, P. (2018). Measurement versus Hermeneutics of Capital. *Storia Libera*, 4 (7), pp. 191-199.
- Gordon, D. (1986). *Hermeneutics Versus Austrian Economics*. Retrieved from <https://mises.org/library/hermeneutics-versus-austrian-economics>.
- Gordon, D. (1993). Toward a deconstruction of utility and welfare economics. *The Review of Austrian Economics*, 6 (2), pp. 99-112.
- Hamlin, A. (1992). On the Possibility of Austrian Welfare Economics. In B. Caldwell & S. Böhm (Eds.), *Austrian Economics: Tensions and New Directions* (pp. 193-206). New York: Kluwer Academic Publishers.
- Harris, J. (2016). Gadamer, Lavoie, and their Critics. The Hermeneutics Debate Revisited. *Journal of Markets & Morality*, 19 (1), pp. 61-78.
- Hayek, F. A. (1946/1948). Individualism: True and False. In F. A. Hayek, *Individualism and Economic Order* (pp. 1-32). Chicago: The University of Chicago Press
- Hayek, F. A. (1952). *The Sensory Order*. Chicago: University of Chicago Press.
- Hayek, F. A. (1952/1964). *The Counter-Revolution of Science: Studies in the Abuse of Reason*. London: Collier-Macmillan.
- Hayek, F. A. (1955). Degrees of Explanation. *The British Journal for the Philosophy of Science*, 6 (23), pp. 209-225.
- Hayek, F. A. (1956/1967). The Dilemma of Specialization. In F. A. Hayek, *Studies In Philosophy, Politics And Economics* (pp. 122-132). Chicago: The University of Chicago Press.
- Hayek, F. A. (1957/1967). What's Social? What Does It Mean? In F. A. Hayek, *Studies In Philosophy, Politics And Economics* (pp. 237-247). Chicago: The University of Chicago Press.
- Hayek, F. A. (1967). The Theory of Complex Phenomena. In F. A. Hayek, *Studies In Philosophy, Politics And Economics* (pp. 22-42). Chicago: The University of Chicago Press.

- Hayek, F. A. (1973/1998). *Law, Legislation and Liberty. A new statement of the liberal principles of justice and political economy*. London: Routledge.
- Hayek, F. A. (1976). *The Mirage of Social Justice. Law, Legislation, and Liberty – Volume 2*. Chicago: University of Chicago Press.
- Hayek, F. A. (1988). *The Fatal Conceit. The Errors of Socialism*. Edited by W. W. Bartley III. Chicago: University of Chicago Press.
- Heath, J. (2014). Methodological Individualism. *The Stanford Encyclopedia of Philosophy*. <http://plato.stanford.edu/archives/fall2014/entries/methodological-individualism/>.
- Herbener (1997). The Pareto Rule and Welfare Economics. *The Review of Austrian Economics*, 10 (1), pp. 79-106.
- Heyne, P., Boettke, P. J., Prychitko, D. (2013). *The Economic Way of Thinking. 13th Edition*. Munich: Pearson.
- Holcombe, R. G. (2014). *Advanced Introduction to the Austrian School of Economics*. Cheltenham: Edward Elgar.
- Hoppe, H. (1995). *Economic science and the Austrian method*. Auburn: Mises Institute.
- Horwitz, S. 2000. *Microfoundations and Macroeconomics: An Austrian Perspective*. London: Routledge.
- Horwitz, S. (2004). Monetary Calculation and the Unintended Extended Order: The Misesian Microfoundations of the Hayekian Great Society. *The Review of Austrian Economics*, 17 (4), pp. 307–321.
- Hudik, M. (2012). Transitivity: A Comment on Block and Barnett. *The Quarterly Journal of Austrian Economics*, 15 (4), pp. 456-462.
- Hudik, M. (2015). ‘Mises and Hayek Mathematized’: Toward mathematical Austrian economics. In P. L. Bylund, D. Howden, & J. T. Salerno (Eds.), *The next generation of Austrian economics: Essays in honor of Joseph T. Salerno* (pp. 105–122). Auburn: Mises Institute.
- Hülsmann, J. G. (1999). Economic science and neoclassicism. *The Quarterly Journal of Austrian Economics*, 2 (4), pp. 3–20.
- Hülsmann, J. G. (2001). Garrisonian Macroeconomics. *The Quarterly Journal of Austrian Economics*, 4 (3), pp. 33–41.
- Hutchison, T. W. (1998). Ultra-deductivism from Nassau Senior to Lionel Robbins and Daniel Hausman. *Journal of Economic Methodology*, 5 (1), pp. 43–91.
- Ikeda, Y., Yagi, K., eds. (2012). *Subjectivism and Objectivism in the History of Economic Thought*. London: Routledge.
- Jaffe, W. (1976). Menger, Jevons and Walras dehomogenized. *Economic Inquiry*, 14, pp. 511-524.
- Kaufmann, F. (1929). Soziale Kollektiva. *Zeitschrift für Nationalökonomie* 1, pp. 294-308.
- Kirzner, I. (1960/1976). *The Economic Point of View: An Essay in the History of Economic Thought. 2nd Edition*. Kansas City: Sheed and Ward.
- Kirzner, I. (2001). *Ludwig von Mises: The Man and His Economics*. Wilmington: ISI Books.
- Klamer, A. (1994). Formalism in twentieth-century economics. In P. Boettke (Ed.), *The Elgar Companion to Austrian Economics* (pp. 48-53). Brookfield: Edward Elgar.
- Klein, D. (2012). *Knowledge and Coordination. A Liberal Interpretation*. Oxford, New York: Oxford University Press.
- Kolev, S. (2017). *Neoliberale Staatsverständnisse im Vergleich*. Oldenbourg: De Gruyter.
- Kurrild-Klitgaard, P. (2001). On Rationality, Ideal Types and Economics: Alfred Schutz and the Austrian School. *The Review of Austrian Economics*, 14(2/3), pp. 119–143.
- Kurrild-Klitgaard, P. (2003). The Viennese Connection. Alfred Schutz and the Austrian School. *The Quarterly Journal of Austrian Economics*, 6(2), p. 35-67.
- Lachmann, L. (1977). *Capital, Expectations, and the Market Process. Essays on the Theory of the Market Economy*. Kansas City: Sheed Andrews and McMeel.

- Lavoie, D. (1985). *Rivalry and Central Planning - The socialist calculation debate reconsidered*. Cambridge: Cambridge University Press.
- Lavoie, D. (1985/2011). The interpretive dimension of economics: Science, hermeneutics, and praxeology. *The Review of Austrian Economics*, 24, pp. 91-128.
- Lavoie, D., ed. (1990). *Economics and Hermeneutics*. New York: Routledge.
- Leeson, P. T., Boettke, P. J. (2006). Was Mises Right? *Review of Social Economy*, 64 (2), pp. 247–265.
- Leonard, R. (2010). *Von Neumann, Morgenstern, and the Creation of Game Theory. From Chess to Social Science, 1900-1960*. Cambridge: Cambridge University Press.
- Linsbichler, A. (2017). *Was Ludwig von Mises a Conventionalist? A New Analysis of the Epistemology of the Austrian School of Economics*. Basingstoke: Palgrave Macmillan. <https://link.springer.com/book/10.1007/978-3-319-46170-0>
- Linsbichler, A. (2019). Felix Kaufmann – “A Reasonable Positivist”? In F. Stadler (Ed.), *Ernst Mach – Life, Work, Influence* (pp. 709-719), Cham: Springer. <https://link.springer.com/article/10.1007/s11229-019-02150-8>
- Linsbichler, A. (2020). Friedrich Wieser, in: *Österreichisches Biographisches Lexikon 1815-1950. Band XVI, Lieferung 71*, (pp. 193-194). Austrian Academy of Sciences Press, Vienna, 2020.
- Linsbichler, A. (2021a). Rationalities and Their Limits: Reconstructing Neurath’s and Mises’s Prerequisites in the Early Socialist Calculation Debates. *Research in the History of Economic Thought and Methodology*, 39B, pp. 95-128. <https://doi.org/10.1108/S0743-41542021000039B00>
- Linsbichler, A. (2021b). Sprachgeist and Realisticness. The Troubled Relationship Between (Austrian) Economics and Mathematics Revisited. *Center for the History of Political Economy at Duke University Working Paper Series*, 2021-15. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3897919
- Linsbichler, A. (2021c). Austrian economics without extreme apriorism: construing the fundamental axiom of praxeology as analytic. *Synthese*, 198, pp. 3359-3390. <https://link.springer.com/article/10.1007/s11229-019-02150-8>
- Linsbichler, A. (2021d). Viennese Late Enlightenment and the Early Socialist Calculation Debates: Rationalities and Their Limits. *Center for the History of Political Economy at Duke University Working Paper Series*, 2021-16. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3904011
- Linsbichler, A. (2021e). Philosophy of Austrian Economics. In C. Heilmann, J. Reiss (Eds.). *The Routledge Handbook of Philosophy of Economics* (pp. 169-185). Abingdon: Routledge. <https://www.routledge.com/The-Routledge-Handbook-of-the-Philosophy-of-Economics/Heilmann-Reiss/p/book/9781138824201>
- Linsbichler, A. (2021f). Otto Neurath and Ludwig Mises: Philosophy, Politics, and Economics in Viennese Late Enlightenment, *Erasmus Journal for Philosophy and Economics*, accepted.
- Linsbichler, A. (2021g). *Viel mehr als nur Ökonomie. Köpfe und Ideen der Österreichischen Schule der Nationalökonomie*. Wien: Böhlau (to be published).
- Linsbichler, A. & da Cunha, I. F. (2020). Otto Neurath’s Scientific Utopianism Revisited – A Refined Model for Utopias in Thought Experiments. *Submitted*.
- Linsbichler, A. & Taghizadegan, R. (2019a). Introduction to the new edition, in: R. Taghizadegan, H. R. James (eds.), *Felix Kaufmann’s Songs of the Mises-Kreis. Wiener Lieder zur Philosophie und Ökonomie* (pp. 11-16). mises.at, Wien, 2019.
- Linsbichler, A. & Taghizadegan, R. (2019b). Commentaries to the songs, in: R. Taghizadegan, H. R. James (eds.), *Felix Kaufmann’s Songs of the Mises-Kreis. Wiener Lieder zur Philosophie und Ökonomie* (pp. 57-196). mises.at, Wien, 2019.
- Lipski, J. (2021). Austrian economics without extreme apriorism: A critical reply. *Synthese* (forthcoming, published online: <https://doi.org/10.1007/s11229-021-03249-7>).
- Long, R. (2004). Anti-Psychologism in Economics: Wittgenstein and Mises. *The Review of Austrian Economics*, 17 (4), pp. 345–369.
- Long, R. (2006). Realism and Abstraction in Economics: Mises and Aristotle versus Friedman. *The Quarterly Journal of Austrian Economics*, 9 (3), pp. 3–23.

- Long, R. (2008). Wittgenstein, Praxeology, and Frege's Three Realms. Retrieved from <http://www.praxeology.net/praxeo.htm> on 07/03/2016.
- Long, R. (2010). *Wittgenstein, Austrian Economics, and the Logic of Action: Praxeological Investigations*. Working copy retrieved from <http://praxeology.net/wiggy-draft.pdf> on March 7, 2016.
- Machlup, F. (1969). If Matter Could Talk. In S. Morgenbesser, P. Suppes, M. White (Eds.), *Philosophy, Science, and Method* (pp. 286-305). New York: St. Martin's Press.
- Machlup, F. (1991). *Economic Semantics. Second Edition*. New Brunswick, London: Transaction Publishers.
- Mäki, U. (1990a). Mengerian economics in realist perspective. *History of Political Economy*, 22 (annual supplement), pp. 289-310.
- Mäki, U. (1990b). Scientific realism and Austrian explanation. *Review of Political Economy*, 2 (3), pp. 310-344.
- Mäki, U. (1992). The market as an isolated causal process: A metaphysical ground for realism. In B. Caldwell, S. Böhm (Eds.), *Austrian economics: Tensions and new directions* (pp. 35-66). Boston: Springer.
- Mäki, U. (1997). Universals and the Methodenstreit: a Re-examination of Carl Menger's Conception of Economics as an Exact Science. *Studies in the History and Philosophy of Science*, 28(3), pp. 475-495.
- Martin, A. (2015). Austrian Methodology: A Review and Synthesis. In P. J. Boettke, C. J. Coyne (Eds.), *The Oxford Handbook of Austrian Economics* (pp. 13-42). Oxford: Oxford University Press.
- Mayer, T. (1998). Boettke's Critique of Mainstream Economics: An Empiricist's Response. *Critical Review*, 12 (1-2), pp. 151-171.
- Megger, D. (2021). Determinism, free will, and the Austrian School of Economics, *Journal of Economic Methodology*, 28(3): 304-321.
- Menger, C. (1871/2004). *Principles of Economics*. Auburn: Ludwig von Mises Institute.
- Menger, C. (1883/1985). *Investigations into the Method of the Social Sciences with Special Reference to Economics*. New York and London: New York University Press.
- Menger, K. (1934/1974). *Morality, Decision and Social Organizations. Toward a Logic of Ethics*. Dordrecht: D. Reidel.
- Menger, K. (1936/1979). Remarks on the Law of Diminishing Returns: A Study in Meta-Economics. In K. Menger, *Selected Papers in Logic and Foundations, Didactics, Economics, Vienna Circle Collection 10* (pp. 279-302). Dordrecht: Springer.
- Menger, K. (1972). Österreichischer Marginalismus und mathematische Ökonomie. *Zeitschrift für Nationalökonomie*, 32, pp. 19-28.
- Milford, K. (1990). Menger's methodology. *History of Political Economy*, 22 (annual supplement), pp. 215-239.
- Milford, K. (1997). Hufeland als Vorläufer von Menger und Hayek. In B. P. Priddat (ed.), *Wert, Meinung, Bedeutung: Die Tradition der subjektiven Wertlehre in der deutschen Nationalökonomie vor Menger* (pp. 89-160). Marburg: Metropolis-Verlag.
- Milford, K. (2008). Inductivism and Anti-Essentialism in Menger's Work. In G. Campagnolo, S. Haltmayer (eds.), *Carl Menger. Discussed on the Basis of New Findings* (pp. 59-86). Frankfurt a. M.: Lang.
- Milford, K. (2010). A Note on Menger's Problem Situation and Non-Essentialist Approach to Economics. In H. Hagemann, T. Nishizawa, and Y. Ikeda (Eds.), *Austrian Economics in Transition: From Carl Menger to Friedrich Hayek* (pp. 154-175). New York: Palgrave Macmillan.
- Milford, K. (2012). The Empirical and Inductivist Economics of Professor Menger. In J. Backhaus (Ed.), *Handbook of the History of Economic Thought* (pp. 415-436). Dordrecht: Springer.
- Milford, K. (2015). Zur Entwicklung der Volkswirtschaftslehre an der Universität Wien von 1763 bis 1976. In K. Fröschl, G. Müller, T. Olechowski, B. Schmidt-Lauber (Eds.), *Reflexive Innenansichten aus der Universität: Disziplinengeschichten zwischen Wissenschaft, Gesellschaft und Politik* (pp. 341-354). Göttingen: V&R unipress.

- Milford, K., Cerman, M. (2011). Scheinsatzpositionen als Begründungsversuche der theoretischen Ökonomie. In P. Berger, P. Eigner, A. Resch (Eds.), *Die vielen Gesichter des wirtschaftlichen Wandels* (pp. 55–82). Wien: LIT-Verlag.
- Milonakis, D. & Fine, B. (2009). *From Political Economy to Economics - Method, the social and the historical in the evolution of economic theory*. New York: Routledge.
- Mises, L. (1933/2003). *Epistemological problems of economics*. Auburn: Ludwig von Mises Institute.
- Mises, L. (1936). *Letter to Karl Menger 10/II/1936*. Menger Papers, Box 20, David M. Rubenstein Rare Book & Manuscript Library, Duke University.
- Mises, L. (1940). *Nationalökonomie: Theorie des Handelns und Wirtschaftens*. Genf: Editions Union.
- Mises, L. (1940/2009). *Memoirs*. Auburn: Ludwig von Mises Institute.
- Mises, L. (1949/1998). *Human Action: A Treatise on Economics*. Auburn: Ludwig von Mises Institute.
- Mises, L. (1957/2005). *Theory and history: An interpretation of social and economic evolution*. Indianapolis: Liberty Fund.
- Mises, L. (1962). *The ultimate foundation of economic science: An essay on method*. Princeton: D. van Nostrand.
- Morgenstern, O. (1963). *Limits to the Uses of Mathematics in Economics*. Research Memorandum, retrieved from <https://apps.dtic.mil/dtic/tr/fulltext/u2/296935.pdf>.
- Murphy, R. P. & Callahan, G. (2006). Hans-Hermann Hoppe's Argumentation Ethic: A Critique. *Journal of Libertarian Studies*, 20 (2), pp. 53-64.
- Neck, R. (2019). Der methodologische Individualismus. In G. Franco (Ed.), *Handbuch Karl Popper* (pp. 447-462). Wiesbaden: Springer.
- Nemeth, E. (1999). *Denken in Beziehungen – Beiträge zur Ortsbestimmung der Erkenntnisphilosophie*, habilitation thesis, University of Vienna.
- Nozick, R. (1977). On Austrian Methodology. *Synthese*, 36, pp. 353-392.
- O'Driscoll, G., & Rizzo, M. (2015). *Austrian Economics Re-examined. The Economics of Time and Ignorance*. London: Routledge.
- O'Neill, B. (2010). Choice and Indifference: a Critique of the Strict Preference Approach. *The Quarterly Journal of Austrian Economics*, 13 (1), pp. 71-98.
- O'Neill, J. (1995). Essences and Markets. *The Monist*, 78 (3), pp. 258-275.
- Oakley, A. (1997). *The Foundations of Austrian Economics from Menger to Mises. A Critico-Historical Retrospective of Subjectivism*. Cheltenham: Edward Elgar.
- Oliva Cordoba, M. (2017). Uneasiness and scarcity: An analytic approach towards Ludwig von Mises's Praxeology. *Axiomathes*, 27, pp. 521-529.
- Pham, A. (2017). Mainstream economics and the Austrian school: toward reunification. *Erasmus Journal for Philosophy and Economics*, 10 (1), pp. 41-63.
- Popper, K. (1957/1972). The Aim of Science. In K. Popper, *Objective Knowledge: An Evolutionary Approach* (pp. 191-205). Oxford: Clarendon Press.
- Popper, K. (1960/2000). Three Views Concerning Human Knowledge. In K. Popper, *Conjectures and Refutations: The Growth of Scientific Knowledge* (pp. 97-119). London: Routledge.
- Priddat, B., ed. (1997). *Wert, Meinung, Bedeutung. Die Tradition der subjektiven Wertlehre in der deutschen Nationalökonomie vor Menger*. Marburg: Metropolis-Verlag.
- Puster, R. (2014). Dualismen und ihre Hintergründe. In L. Mises, *Theorie und Geschichte: Eine Interpretation sozialer und wirtschaftlicher Entwicklung* (pp. 7–50). München: Akston.
- Raico, R. (2012). *Classical Liberalism and the Austrian School*. Auburn: Ludwig von Mises Institute.
- Rothbard, M. (1951). Praxeology: Reply to Mr. Schuller. *American Economic Review*, 41 (5), pp. 943-946.

- Rothbard, M. (1952/2009). A Note on Mathematical Economics. Bettina Greaves Papers, Mises Archives at the Mises Institute, Auburn, Alabama. Posted online <https://mises.org/library/note-mathematical-economics>, September 1, 2009.
- Rothbard, M. (1956/1997). Toward a reconstruction of utility and welfare economics. In M. Rothbard, *The Logic of Action, Volume One. Method, Money and the Austrian School* (pp. 211–254). Cheltenham: Elgar.
- Rothbard, M. (1957). In Defense of ‘Extreme Apriorism’. *Southern Economic Journal*, January 1957, pp. 314–320.
- Rothbard, M. (1973/1997). Praxeology as the method of the social sciences. In M. Rothbard, *The Logic of Action, Volume One. Method, Money and the Austrian School* (pp. 28–57). Cheltenham: Elgar.
- Rothbard, M. (1976/1997). Praxeology: The Method of Austrian Economics. In M. Rothbard, *The Logic of Action, Volume One. Method, Money and the Austrian School* (pp. 59–79). Cheltenham: Elgar.
- Rothbard, M. (1982/1998). *The Ethics of Liberty*. New York: New York University Press.
- Salerno, J. T. (1993). Mises and Hayek Dehomogenized. *The Review of Austrian Economics*, 6 (2), pp. 113–146.
- Salerno, J. T. (2002). The Rebirth of Austrian Economics – In the Light of Austrian Economics. *The Quarterly Journal of Austrian Economics*, 5 (4), pp. 111–128.
- Salerno, J. T., Dorobat, C. E. & Israel, K. (2020). Two views on neutral money: Wieser and Hayek versus Menger and Mises. *European Journal of the History of Economic Thought*, 27 (5), pp. 682–711.
- Scheall, S. (2015a). Lesser degrees of explanation: further implications of F. A. Hayek’s methodology of sciences of complex phenomena. *Erasmus Journal for Philosophy and Economics*, 8 (1), pp. 42–60.
- Scheall, S. (2015b). Hayek the Apriorist? *Journal of the History of Economic Thought*, 37 (1), pp. 87–110.
- Scheall, S. (2017a). What is so extreme about Mises’s extreme apriorism? *Journal of Economic Methodology*, 24 (3), pp. 226–249.
- Scheall, S. (2017b). Review of Alexander Linsbichler, Was Ludwig von Mises a Conventionalist?, *Erasmus Journal for Philosophy and Economics*, 10 (2), pp. 110–115.
- Schulak, E. M., Unterköfler, H. (2011). *The Austrian School of Economics: A History of Its Ideas, Ambassadors, and Institutions*. Auburn: Ludwig von Mises Institute.
- Schumacher, R., Scheall, S. (2020). Karl Menger's unfinished biography of his father: New insights into Carl Menger's life through 1889. *CHOPE Working Paper*, No. 2020-01.
- Schumpeter, Joseph. (1908/1980). *Methodological Individualism*. Bruxelles: Institutum Europaeum.
- Schweitzer, P. (2000). Two Competing Paradigms in Austrian Economic Theory. *Notizie di Politeia*, 16 (59), pp. 44–66.
- Selgin, G. (1990). *Praxeology and Understanding. An Analysis of the Controversy in Austrian Economics*. Auburn: The Ludwig von Mises Institute.
- Shionoya, Y. (2005). Instrumentalism in Schumpeter’s Economic Methodology. In Y. Shionoya, *The Soul of the German Historical School* (pp. 65–96). Boston: Springer.
- Smith, A. (1776/1976). *An Inquiry into the Nature and Causes of the Wealth of Nations*. Chicago: University of Chicago Press.
- Smith, B. (1990). Aristotle, Menger, Mises: an essay in the metaphysics of economics. *History of Political Economy*, 22 (annual supplement), pp. 263–288.
- Smith, B. (1994). Carl Menger: On Austrian Philosophy and Austrian Economics. In B. Smith, *Austrian Philosophy. The Legacy of Franz Brentano* (pp 299–334). Chicago and LaSalle: Open Court.
- Smith, B. (1996). In Defense of Extreme (Fallibilistic) Apriorism. *Journal of Libertarian Studies*, 12 (1), pp. 179–192.
- Sowell, T. (1987/2007). *A Conflict of Visions. Ideological Origins of Political Struggles*. New York: Basic Books.

- Storr, V. H. (2010). The Facts of the Social Sciences Are What People Believe and Think. In P. J. Boettke (Ed.), *Handbook on Contemporary Austrian Economics* (pp. 30-40). Cheltenham: Edward Elgar.
- Storr, V. H. (2017). Ludwig Lachmann's peculiar status within Austrian economics. *Review of Austrian Economics*, 32, pp. 63-75.
- Streissler, E. (1986). Arma virumque cano. Friedrich von Wieser, the Bard as Economist. In N. Leser (ed.), *Die Wiener Schule der Nationalökonomie* (pp. 83-106). Graz: Böhlau.
- Streissler, E. (1990). Carl Menger, der deutsche Nationalökonom. B. P. Priddat (ed.), *Wert, Meinung, Bedeutung: Die Tradition der subjektiven Wertlehre in der deutschen Nationalökonomie vor Menger* (pp. 33-88). Marburg: Metropolis-Verlag.
- Streissler, E. (2002). Wirtschaftliche Entscheidungstheorie als Angelpunkt der Österreichischen Schule der Nationalökonomie. In L. Bauer, K. Hamberger (Eds.), *Gesellschaft denken. Eine erkenntnistheoretische Standortbestimmung der Sozialwissenschaften* (pp. 309-318). Wien: Springer.
- Stringham, E., ed. (2007). *Anarchy and the Law. The Political Economy of Choice*. New York: Routledge.
- Stringham, E. (2010). Economic value and cost are subjective. In P. J. Boettke (Ed.), *Handbook on Contemporary Austrian Economics* (pp. 43-66). Cheltenham: Edward Elgar.
- Sugden, R. (1992). Commentary: Austrian Prescriptive Economics. In B. Caldwell & S. Böhm (Eds.), *Austrian Economics: Tensions and New Directions* (pp. 207-214). New York: Kluwer Academic Publishers.
- Tokumaru, N. (2009). Popper's Analysis of the Problem of Induction and Demarcation and Mises' Justification of the Theoretical Social Sciences. In Z. Parsnikova, & R. S. Cohen (Eds.), *Rethinking Popper* (pp. 161 - 174). Boston: Springer.
- Tokumaru, N. (2016). From Gedankenexperiment to Social Economics. Wieser's Empiricism and the Social Sciences. In N. Tokumaru, *Social Preference, Institutions, and Distribution. An Experimental and Philosophical Approach* (pp. 133-154). Singapore: Springer.
- Tokumaru, N. (2018). Review of Alexander Linsbichler, Was Ludwig von Mises a Conventionalist?, *History of Economic Ideas*, 26, pp. 168-169.
- Uebel, T. (2019). Rationality and Pseudorationality in Political Economy: Neurath, Mises, Weber. In J. Cat, A. T. Tuboly (Eds.), *Neurath Reconsidered. New Sources and Perspectives* (pp. 197-216). Cham: Springer.
- von Neumann, J., Morgenstern, O. (1953). *Theory of Games and Economic Behavior*. Princeton: Princeton University Press.
- Wagner, R. (2005). Austrian Cycle Theory and the prospect of a coordinationist macroeconomics. In J. Backhaus (Ed.), *Modern Applications of Austrian Thought* (pp. 77-92). London: Routledge.
- Wagner, R. (2020). *Macroeconomics as Systems Theory. Transcending the Micro-Macro Dichotomy*. Cham: Palgrave Macmillan.
- Wasserman, J. (2016). "Un-Austrian" Austrians? Haberler, Machlup, and Morgenstern, and the Post-Emigration Elaboration of Austrian Economics. *Research in the History of Economic Thought and Methodology*, 34A, pp. 93-124.
- Wasserman, J. (2019). *The Marginal Revolutionaries. How Austrian Economists Fought the War of Ideas*. New Haven, London: Yale University Press.
- Weber, W. (1949). *Wirtschaftswissenschaft und Wirtschaftspolitik in Österreich*. Wien: Springer-Verlag.
- Wieser, F. (1884). *Über den Ursprung und die Hauptgesetze des wirthschaftlichen Wertes*. Wien: Hölder.
- Wieser, F. (1889/1893). *Natural Value*. London, New York: Macmillan & Co.
- Wieser, F. (1926/1983). *The Law of Power*. Lincoln: Bureau of Business Research (University of Nebraska).
- Wutscher, R., Murphy, R. P., Block, W. (2010). Mathematics in Economics: An Austrian Methodological Critique. *Philosophical Investigations*, 33 (1), pp. 44-66.
- Yeager, L. (1994). Mises and Hayek on Calculation and Knowledge. *The Review of Austrian Economics*, 7 (2), pp. 93-109.
- Zanotti, G., Cachanosky, N. (2015). Implications of Machlup's interpretation of Mises's epistemology. *Journal of the History of Economic Thought*, 37 (1), pp. 111-138.

Zanotti, G., Cachanosky, N. (2017). What is so extreme about Mises's extreme apriorism? Reply to Scott Scheall. Available at SSRN: <https://ssrn.com/abstract=2875122>.

Zywicki, T, Boettke, P., eds. (2017). *Research Handbook on Austrian Law and Economics*. Northampton: Edward Elgar.