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Abstract

This paper examines Gottfried Haberler's early theoretical work on index numbers as a unique point of convergence between the Austrian School of Economics and the tradition of Logical Empiricism. While these schools are often seen as methodologically opposed - the former grounded in subjectivism and praxeology, the latter in formal logic and empirical verification - Haberler's 1927 habilitation thesis *Der Sinn der Indexzahlen* exemplifies a productive synthesis of their core principles. The paper begins by outlining the epistemological and methodological foundations of the Austrian School, with emphasis on its subjective theory of value and skepticism toward aggregate measurement. It then summarizes key tenets of Logical Empiricism, particularly its insistence on observable phenomena, operational definitions, and formal rigor. Against this backdrop, Haberler's analysis of price indices is shown to combine the Austrian emphasis on individual choice and subjectivity with the logical empiricist demand for formal discipline and observational grounding.. The result is a methodological hybrid that both anticipates and complicates later debates over the role of formalism and empiricism in economic theory. By recovering this underappreciated moment of methodological cross-pollination, the paper contributes to a more nuanced understanding of 20th-century economic thought.

Keywords: Index numbers; Austrian Economics; Logical Empiricism; Gottfried Haberler
JEL-Codes: B13; B40; C43; E31

1 Introduction

In the intellectual milieu of interwar Vienna, two methodologically distinct currents emerged that would come to shape different strands of economic and philosophical thought: the Austrian School, rooted in subjectivism and methodological individualism, and the movement of Logical Empiricism, which sought to reconstruct scientific knowledge on the basis of observable phenomena and logical analysis. Though both traditions shared a commitment to theoretical clarity, they are typically seen as fundamentally opposed. The Austrian School emphasized introspection, purpose-driven human action, and the irreducibility of subjective valuations; logical empiricists, by contrast, called for operational definitions, empirical verification, and the elimination of metaphysical language from science. As a result, their respective approaches to economics often appeared incommensurable.

Yet there are moments in the history of economic thought where elements of these two traditions were brought into dialogue, whether deliberately or by historical accident. One such moment can be found in the early theoretical work of Gottfried Haberler, particularly in his 1927 habilitation thesis *Der Sinn der Indexzahlen* (The Meaning of Index Numbers (Haberler, 1927)). Although Haberler was a product of the Austrian School, closely associated with Ludwig von Mises and a regular participant in his private seminar, he engaged rigorously with the formal and empirical challenges of economic measurement. In so doing, he developed a methodological position that resonates - perhaps surprisingly - with the concerns of logical empiricism.

This paper explores how Haberler's analysis of index numbers straddles this divide. It begins by outlining the epistemological and methodological commitments of the Austrian School, with particular attention to the role of subjectivism, praxeology, and skepticism toward aggregate constructs. It then turns to logical empiricism and its influence on the scientific self-understanding of economists in the interwar period. Against this backdrop, Haberler's index number theory is presented as a remarkable case of synthesis: his insistence on grounding measurement in individual economic choices reflects Austrian subjectivism,

while his pursuit of generalizable, logically coherent formulas for price-level comparison reveals an affinity with the formalist aims of logical empiricism.

By examining this overlooked intersection, the paper offers a reassessment of Haberler's place in the history of economic thought - not merely as a theorist of international trade, economic crises, or as a precursor to later developments such as revealed preference theory (Israel, 2024), but as a thinker who navigated, and partially reconciled, two major methodological currents of the twentieth century.

2 The Methodological Position of the Austrian School

The Austrian School of Economics, established in the late nineteenth century by Carl Menger, represents a distinctive methodological tradition that has consistently set itself apart from both the mainstream economics of its time and from later developments inspired by formalism and empiricism. This tradition, later systematized by Ludwig von Mises and further developed by Friedrich A. Hayek and Murray Rothbard, rests on a philosophical foundation rooted in methodological individualism, subjectivism, and a causal-realist approach to economic explanation - that is an emphasis on real-world causal mechanisms rather than predictive formalism (Israel and Hülsmann, 2019).

Carl Menger developed a distinct theoretical and methodological framework that diverged markedly from the other pioneers of marginalism, William Stanley Jevons and Léon Walras (Jaffé, 1976). While all three contributed to marginal analysis, Menger rejected the notion of fixed functional relationships among economic variables (Menger, 1883). His *Grundsätze der Volkswirtschaftslehre* (1871) emphasized causal explanations over equilibrium analysis and focused on verbal logic rather than algebraic expressions (Menger, 1871). Menger did not construct equilibrium models or define utility functions with differentiable properties. Instead, he understood economic laws as causal but non-quantitative relationships that stem from subjective value judgments and are embedded in a historically contingent reality. For

Menger, mathematical formalization - particularly the simultaneous equation systems central to Walras's work - obscures rather than illuminates the underlying causal structures of economic phenomena.

Unlike the rising neoclassical and later positivist schools that sought to model economics after the natural sciences - with a focus on mathematical formalization and predictive power - the Austrians have insisted on the aprioristic character of economic theory. In their view, economics is not an empirical science in the narrow sense. Rather, it is a branch of praxeology: the study of human action as purposeful behavior (Mises, 1998). According to Mises, the core propositions of economics can be derived deductively from the concept of human action - i.e., the insight that humans act to achieve ends using scarce means (Mises, 1933, 1962). While Mises systematically outlined these methodological views only later in his career, Gottfried Haberler was still brought up in this tradition and was heavily influenced by Mises, in particular in his theoretical work (Hülsmann, 2007, pp. 365, 368).[1]

This methodological standpoint has several implications. First, the Austrian School rejects the idea that economic laws are to be discovered through empirical generalizations or statistical inference. Because human behavior is shaped by subjective valuations, expectations, and changing knowledge, there are no constant quantitative relationships in economics akin to those found in the natural sciences. As such, Austrians view mathematical models and econometric techniques with skepticism - not as tools for discovering economic laws, but at best as aids for historical description.

Second, the Austrian tradition emphasizes verbal, logical analysis over mathematical formalism. Menger (1871) exemplifies this approach: his theory of value and price formation is articulated in causal terms and avoids the equilibrium-based, functionalist thinking that

[1]It should be mentioned, however, that Hülsmann (2007, p. 161) also emphasizes a strong neoclassical influence on Haberler and the entire fourth generation of Austrian economists through Friedrich von Wieser who was Menger's successor at the University of Vienna: "The entire fourth generation of Austrian economists - brilliant young men like Hayek, Machlup, Haberler, Morgenstern, and Rosenstein-Rodan - were thus shaped by the Wieserian mold before they set off on their own intellectual paths. Largely ignorant of Menger's *Principles* (out of print since the 1880s), they were trained in the spirit of the neoclassical synthesis." In light of this observation it should not come as a surprise that Haberler's work represents a bridge between different approaches.

characterized the work of contemporaries such as Jevons and Walras. This emphasis on causal explanation, rather than equilibrium modeling, has remained central to Austrian economics (Klein, 2008).

Third, the Austrians maintain a sharp distinction between theory and history (Mises, 2007). Economic theory provides universal insights into the structure of human action - such as the law of marginal utility (Rothbard, 2009, pp. 21ff.) or the impossibility of economic calculation under socialism (Mises, 1922) - while history and empirical data provide contextual knowledge of specific events. This distinction underpins the Austrian critique of econometrics: without stable parameters or controlled experiments, empirical testing of economic hypotheses becomes methodologically incoherent (Israel, 2023; Selgin, 1990).

Finally, the Austrian methodology is marked by a realist orientation. Austrians hold that the aim of economics is to uncover real causal mechanisms behind market phenomena, not merely to construct predictive instruments. In this respect, they align more with classical economics than with the instrumentalist turn that has come to dominate mainstream economic thinking since the mid-twentieth century (Friedman, 1953; Blaug, 1980).

This methodological perspective laid the foundation for a number of influential contributions within the Austrian tradition, including theories of capital, business cycles, and money. It also defined the intellectual environment in which Gottfried Haberler received his early training. Yet, as we turn from Austrian subjectivism to the tradition of Logical Empiricism, a striking contrast emerges: where the Austrians emphasized deductive reasoning and theoretical realism, logical empiricists sought scientific validity through formal precision, observational grounding, and empirical verification. Understanding the nature of this alternative approach is essential for grasping the methodological significance of Haberler's attempt to navigate between the two.

3 The Methodological Position of Logical Empiricism

Emerging from the intellectual ferment of interwar Vienna and Berlin, the tradition of logical empiricism sought to reorient the philosophy of science around the principles of logical analysis and empirical verifiability. Associated most prominently with the Vienna Circle and figures such as Rudolf Carnap, Otto Neurath, and Hans Reichenbach, the movement reacted against metaphysical speculation and the perceived looseness of traditional philosophy (Richardson, 1998). Its goal was to reconstruct scientific knowledge as a unified, logically ordered system grounded in observational data and intersubjective testability. While the Austrian economists of the same period embraced subjectivism and deductive reasoning rooted in introspection, the logical empiricists emphasized formal clarity, predictive power, and the verification of theoretical claims through empirical means. Despite their apparent methodological incompatibility, both traditions were shaped by the shared intellectual atmosphere of early twentieth-century Central Europe. As we will see, Haberler's work on index numbers offers a rare case in which elements from both perspectives were drawn into productive synthesis.

At the core of logical empiricism was a radical redefinition of what counts as meaningful knowledge. The movement's early architects, notably Moritz Schlick and Rudolf Carnap, argued that a statement is cognitively meaningful only if it is either empirically verifiable or analytically true - that is, logically valid by virtue of its form (Carnap, 1959; Schlick, 1959). This verification principle served as a criterion to exclude metaphysical, ethical, or introspective propositions from the domain of science. Unlike the Austrians, who grounded their theories in non-empirical insights about purposeful human action, the logical empiricists sought to purge science of such elements, viewing them as unverifiable and thus epistemically suspect. In economics, this translated into a preference for observable, measurable, and testable relationships, and a suspicion toward the kinds of value-laden or introspective claims that underpinned Austrian praxeology. Yet while the Austrians defended the a priori validity of certain economic laws, logical empiricists insisted that empirical content

was what distinguished science from speculation (Carnap, 1936). This opposition sets the stage for understanding the methodological significance of Haberler's contribution: while he remained committed to theoretical reasoning, his concern with measurement reflects a conscious engagement with the verificationist ideal of grounding economic analysis in observable data.

Closely tied to the verification principle was the logical empiricist commitment to grounding scientific statements in observable behavior rather than in unobservable mental states or introspective categories. In economics, this translated into a methodological preference for data that could be directly recorded - such as prices, quantities, and choices[2] - over theoretical constructs like utility or subjective value, unless these could be defined operationally. The influence of behaviorism, particularly in psychology and the social sciences, reinforced this orientation. Otto Neurath, for instance, advocated for a form of physicalism that reduced scientific language to statements about physical events, ideally translatable across disciplines (Neurath, 1931). By contrast, the Austrian School insisted that economic analysis must begin with the subjective meaning that individuals attach to their actions - meanings that cannot be fully captured in behavioral terms alone. This divergence reflects a deeper epistemological split: whereas logical empiricism sought intersubjective objectivity through publicly observable criteria, Austrian economics held that understanding economic phenomena required access to the internal logic of human decision-making, even if its central categories - such as desires, needs, preferences, values etc. - are not directly observable.

A further hallmark of logical empiricism was its emphasis on formalization and logical structure in scientific theorizing. Influenced by developments in mathematical logic and the axiomatic method, thinkers like Rudolf Carnap aimed to reconstruct scientific theories as systems of logically connected statements derived from clearly defined primitives (Richardson, 1998). The ideal was a rigorously structured science, in which imprecise concepts would

[2]Indeed, one of the central claims that Mises (1962) made was that choices are not directly observable, only bodily movements are. The interpretation of a bodily movement as being a choice requires introspective reasoning or understanding. And this introspective reasoning then provides a way to operationalize the notion of choice in terms of observables, which is crucial to logical empiricism.

be replaced by formal terms and theoretical claims could be traced back to observational bases via rules of correspondence. This emphasis on formal clarity and syntactic rigor stood in stark contrast to the Austrian preference for verbal reasoning and conceptual analysis. While Austrian economists like Menger and Mises prized internal logical consistency, they resisted the reduction of economic theory to formal models or symbolic systems, arguing that such methods obscure the complex, context-dependent nature of human action. For the logical empiricists, however, it was precisely the abstraction and formal structure of a theory that enabled its scientific credibility. Economic theory, to be genuinely scientific in their view, needed to speak a language capable of logical reconstruction and intersubjective testing (Carnap, 1937).

Underlying the logical empiricist project was the ambition to construct a unified science - a single, coherent framework in which all scientific knowledge, from physics to economics, could be expressed in a common logical and empirical language. This aspiration was especially pronounced in the work of Otto Neurath, who envisioned a "scientific world-conception" grounded in physicalist language and unified methodology (Neurath, 1931). Although the strict unity program later encountered internal criticism and was softened in subsequent decades, the ideal of scientific objectivity remained central (Uebel, 2007). The logical empiricists viewed science as a public enterprise that should avoid subjective interpretations and rest instead on intersubjective testability - a criterion meant to secure agreement among observers regardless of individual perspective. This orientation again stood in tension with the Austrian view, in which subjectivity is not a threat to scientific understanding but its necessary starting point. For the Austrians, economic phenomena are inherently interpretive: they emerge from the plans, expectations, and valuations of individuals. In contrast, the logical empiricists sought to cleanse science of such subjectivism in favor of universally valid procedures and neutral observation languages. This methodological commitment to objectivity, and the corresponding rejection of interpretive elements, marked one of the deepest philosophical divides between the two traditions.

Taken together, the methodological commitments of logical empiricism - its emphasis on empirical verifiability, observable behavior, formal clarity, and scientific objectivity - represent a vision of scientific inquiry that stands in marked contrast to the methodological individualism and introspective foundations of the Austrian School. Yet the influence of these ideas extended well beyond the confines of philosophy, shaping the self-understanding of many disciplines, including economics. In the intellectual environment of interwar Vienna, these two traditions coexisted, often in tension but occasionally in productive dialogue (Friedman, 1999). It is within this context that Gottfried Haberler's early theoretical work on index numbers can be situated. As the next section will argue, Haberler did not simply adopt the methodological outlook of logical empiricism, nor did he abandon the Austrian framework in which he was trained. Instead, his work exemplifies a selective synthesis, one in which the introspective logic of subjective valuation is preserved as a basis for interpreting observable data and defining key economic concepts operationally - thus building a bridge between the two methodological traditions.

4 Haberler's Bridge between Austrian Economics and Logical Empiricism

The task of measuring changes in the general price level poses an acute challenge for economic theory: it demands both conceptual clarity about the nature of prices and methodological rigor in aggregating heterogeneous data. In his 1927 habilitation thesis *Der Sinn der Indexzahlen*, Gottfried Haberler (1927) confronts this problem directly. The book, which secured his academic position in Vienna, is much more than a technical treatise on price statistics. It is a methodological intervention that grapples with the philosophical foundations of economic measurement. Drawing on his training in the Austrian School, Haberler begins from the insight that prices, and by extension the price level, are not simple objective facts but expressions of subjective valuations arising in individual acts of choice. Yet

rather than reject price indices as inherently meaningless - a view common among some of his Austrian contemporaries[3] - Haberler sets out to determine under what conditions such indices can be meaningfully interpreted.

Der Sinn der Indexzahlen is structured in two parts. The first presents the formal mathematical approach to index numbers that can be found, for example, in the work of Fisher (1922). The second, more constructive part develops a framework for interpreting price indices through the lens of subjective value theory. It is here that Haberler offers his most original contribution: an argument that the commonly used Laspeyres and Paasche indices can be given a coherent meaning when interpreted as bounds on subjective price level changes, given certain assumptions. This reasoning allows him to preserve the Austrian commitment to methodological individualism while arriving at a result that satisfies the formal and empirical aspirations of logical empiricism. Towards the end of the book Haberler offers applications and discusses empirical practices in official price statistics, relating his analysis to policy debates of the time.

Taken as a whole, Haberler's book exemplifies a methodological synthesis. It resists both the pure subjectivism that would render aggregate measures meaningless, and the naive empiricism that treats price indices as straightforward reflections of economic reality. Instead, it charts a third path: starting from introspective reasoning and arriving - through careful formalization - at empirically meaningful bounds grounded in observable consumer choices. In the following, we examine this synthesis in detail.

4.1 The Subjectivity of the Price Level

Haberler's starting point in the second part of *Der Sinn der Indexzahlen* is a conceptual clarification: any attempt to measure changes in the general price level must concern itself with the notion of income, since price indices are ultimately used to make claims about

[3]Haberler (1927, p. III) expplicitly refers to Ludwig von Mises as one of the preeminent represntatives of the "Scylla of negative skepticism" towards empirical price level determination. On the other hand, Haberler saw the "Charybdis of blind belief in numbers" represented first and foremost by Irving Fisher (1922). His own goal was to occupy a nuanced position in between these two opposing camps.

changes in purchasing power and the evolution of welfare derived from income. To this end, Haberler distinguishes between *nominal income*, *income in kind*, and what he calls *psychic income*. Nominal income refers simply to the monetary income received in a given period. Income in kind, by contrast, designates the bundle of goods and services that the individual purchases with this nominal income. Psychic income is the subjective satisfaction derived from consuming that bundle.

This tripartite distinction immediately places the measurement problem in its proper conceptual domain. What economic theory really cares about is not the nominal sum of money itself, nor the physical composition of the consumption bundle, but the subjective utility the individual derives. Following the tradition of Austrian value theory, Haberler emphasizes that psychic income - the satisfaction of wants - is the ultimate object of interest. As he puts it, "we cannot tell from the goods we consume and their prices what sensations of pleasure they evoke, what needs they satisfy" (Haberler, 1927, p. 81). No statistical procedure can read subjective satisfaction from observed physical quantities or money expenditures. Even if needs were constant from one period to the next - which must itself be assumed - the objectivity of psychic income remains unattainable.

Yet precisely because psychic income is the object of interest, the central practical question of index number theory arises: how much more nominal income is needed in period 2 to achieve the same psychic income obtained in period 1? In other words, by what factor must nominal income be scaled so that the subjective satisfaction achieved in the second period equals that of the first? This, for Haberler, is the core problem of index number theory. It links aggregate price movements to the lived reality of the choosing individual. It also reveals, from the very beginning, that any meaningful interpretation of the "general price level" must pass through individual choice and subjective valuation - not through objective, physicalist magnitudes.

This subjective anchoring has far-reaching methodological implications. Haberler insists that the price level and the exchange value of money are not physical facts but *collective*

concepts — abstractions from a vast multiplicity of individual acts of exchange: "These terms are collective concepts, i.e. they refer to a majority of economic acts, and we want to fall back as often as possible, at least in difficult situations, on the final elements of all economic activity, to human actions... so that we are not misled by collectivist mystifications" (Haberler, 1927, p. 73). Here Haberler's Austrian training is unmistakable: he refuses to treat the price level as an entity with independent existence. What matters is the individual's evaluation of alternatives under conditions of scarcity.

At the same time, Haberler rejects the view that a single index number can capture an objective, homogeneous price level for the entire economy. This critique is directed at what he calls the monist conception of the price level, exemplified in the work of writers like Walsh (1901) or Fisher (1922). In Haberler's pluralist view, the construction and interpretation of index numbers must be adjusted to purpose, and any numerical approximation of the price level is at best an expedient. "It is possible that one index provides a relatively good approximation to serve many purposes, but that would be 'a statistical coincidence' not an 'essential necessity"' (Haberler, 1927, p. 76). The general price level, insofar as it can be spoken of at all, is therefore conceptually derivative: meaningful only within specified assumptions about preferences, consumption behavior, and the purpose of comparison.

The subjectivity of the price level, then, poses a double challenge. On the one hand, it demands a theory rooted in individual choice, not aggregate magnitudes. On the other, it forces the analyst to confront the fact that subjective satisfaction cannot be measured directly. Haberler's contribution lies precisely in navigating this tension. Rather than abandoning index numbers as meaningless, he asks: under what assumptions can observable price and quantity data provide informative bounds on subjective price level changes? This question marks the transition from purely introspective theory to a framework in which changes in psychic income are inferred from choice behavior, thus laying the cornerstone for the methodological synthesis that the next subsections will examine.

4.2 Laspeyres and Paasche as Bounds of Subjective Price Level Changes

Haberler's most important contribution to index number theory lies in his demonstration that the widely used Laspeyres and Paasche indices can be interpreted as *bounds* on the subjective price level change of an individual, under clearly stated assumptions (Israel, 2024). This result, presented in the second part of his book (Haberler, 1927, pp. 77–99), builds on Austrian subjectivism, while seeking a formal and empirically grounded method of comparing incomes across time or space.

Haberler begins by emphasizing that income comparisons are only meaningful under strict conditions. To say that one nominal income, given a certain price structure, is "scientifically" higher than another nominal income, given another price structure, is, in his view, unjustified: not merely because of imperfect data, but because of the subjective nature of the welfare being derived from that income. Only individuals themselves can decide which income they prefer. Still, under certain assumptions, the economist may infer preferences from observed choice and, from there, construct bounds on subjective price level changes.

The foundation of Haberler's reasoning lies in a set of six assumptions:

1. the level to which needs are satisfied is held constant (prior to consumption);
2. preferences and needs themselves remain unchanged across periods or regions;
3. a whole range of side conditions (climatic, social, cultural, and political) are held constant;
4. the entire nominal income is consumed (no saving or investment);
5. all goods are available in both periods (or regions);
6. they can be bought freely on markets.

These assumptions create a controlled conceptual environment in which observed consumption bundles reflect underlying preferences. Let $E_1 = \sum p_1 q_1$ denote nominal income in period 1, fully spent on bundle q_1 at prices p_1, and $E_2 = \sum p_2 q_2$ nominal income in period 2, fully spent on bundle q_2 at prices p_2.

We now ask: *Can observable price and quantity data be used to bound the subjective price level change between the two periods?*

Upper bound: The Laspeyres Index

Suppose the bundle chosen in period 1, q_1, is priced at period–2 prices. Then

$$\sum p_2 q_1$$

is the cost of period–1 consumption at period–2 prices. If the actual income in period 2 exceeds this amount, $E_2 > \sum p_2 q_1$, then the consumer could have purchased the period–1 bundle in period 2 but chose not to. Therefore, $q_2 \succ q_1$, i.e. the second–period bundle is preferred in the sense that it generates a higher psychic income.

Using the identities $E_1 = \sum p_1 q_1$ and $E_2 = \sum p_2 q_2$, the inequality can be rewritten as

$$\frac{E_2}{E_1} > \frac{\sum p_2 q_1}{\sum p_1 q_1} = \mathcal{L}_I,$$

where $\mathcal{L}_I$ is the Laspeyres index. This implies:

$$\frac{E_2}{E_1} > \mathcal{L}_I.$$

If nominal incomes were held constant ($E_1 = E_2$), then $1 > \mathcal{L}_I$. In this case, the Laspeyres index being less than 1 indicates that the consumer prefers the second–period prices. The subjective price level has decreased. More generally, the Laspeyres index sets an *upper bound* on the price level increase.

If $\mathcal{L}_I = 1.1$, then the period-1 bundle of goods costs 10% more money at period-2 prices. Hence, a 10% increase in nominal income would ensure that the consumer could buy the same bundle as in period 1 again in period 2, which, under the assumptions laid out by Haberler, guarantees that the consumer derives at least the same level of psychic income from it. However, the subjective price level of the consumer may have risen by less than 10%, but definitely not more. Given relative price changes, it might be possible that the consumer can afford with a 10% higher nominal income in period 2 a bundle that was not affordable in period 1, but is inherently preferred as it generates a higher psychic income. Haberler concludes: "The Laspeyres index gives the upper bound for the subjective price level change" (Haberler, 1927, p. 90).

Lower bound: The Paasche Index

The argument is symmetric for the Paasche index. We now ask: How much would the second–period bundle q_2 cost at first–period prices?

$$\sum p_1 q_2$$

is the cost of the second–period bundle at period–1 prices. If $E_1 > \sum p_1 q_2$, then the consumer could have bought q_2 in period 1 but did not. Therefore, $q_1 \succ q_2$. We can infer that bundle 1 generates a higher psychic income.

This implies:

$$\frac{E_2}{E_1} < \frac{\sum p_2 q_2}{\sum p_1 q_2} = \mathcal{P}_I,$$

where $\mathcal{P}_I$ is the Paasche index. If nominal incomes are equal ($E_1 = E_2$), this simplifies to $1 < \mathcal{P}_I$, indicating that prices have indeed risen. The argument can again be extended to show that prices might have risen more than the Paasche index indicates, but not less.[4] As Haberler puts it: "The Paasche index gives the lower bound for the subjective price level

[4]For a more detailed outline of the argument, see Israel (2024).

change" (Haberler, 1927, p. 91).

Interpretation

This reasoning allows Haberler to anchor abstract price indices in observable economic behavior - namely, consumer choice under budget constraints. The formal logic depends crucially on the assumptions listed above, especially the idea of free consumer choice and unchanged preferences. But within that framework, price indices that are typically treated as mechanical aggregates acquire a clear economic interpretation.

Haberler uses this result to explain why the Laspeyres index typically exceeds the Paasche index:

$$\mathcal{L}_I = \sum \frac{p_1 q_1}{\sum p_1 q_1} \cdot \frac{p_2}{p_1}, \qquad \mathcal{P}_I = \sum \frac{p_1 q_2}{\sum p_1 q_2} \cdot \frac{p_2}{p_1}.$$

Since relative price increases tend to depress quantities demanded, the price ratios p_2/p_1 that are large tend to be associated with lower q_2, and vice versa. Therefore, those price increases receive greater weight in the Laspeyres index and smaller weight in the Paasche index.

For Haberler, this entire derivation justifies taking some average of Laspeyres and Paasche as a reasonable estimate of price level change. But crucially, the average is not justified by statistical convenience alone. As he notes: "We have thus succeeded in giving the compromise formulas a rational, factual justification, which was completely lacking until now" (Haberler, 1927, p. 94).

The synthesis - starting from introspective value theory and arriving at operationally meaningful, empirically interpretable bounds - lies at the heart of Haberler's methodological significance. In short, starting from the premises of Austrian subjective value theory, Haberler constructs a framework that not only preserves individual choice and valuation at its core, but also meets key methodological demands of logical empiricism—formal coherence, empirical relevance, and the operational meaning of economic concepts.

4.3 Operationalizing Subjective Valuation

What makes Haberler's analysis of index numbers particularly noteworthy is that it bridges an apparent methodological divide: it begins from introspective, subjective valuation – hallmark of the Austrian tradition – but arrives at conclusions that satisfy the logical empiricist ideal of empirical meaningfulness.

Crucially, Haberler does not treat prices, quantities, or indices as ends in themselves. His goal is to establish what can be said about subjective price level changes *given observable choices, prices and quantities.* He recognizes that psychic income cannot be measured directly and that intertemporal comparisons of satisfaction are fraught with conceptual difficulties. Yet by interpreting observed consumer behavior under specified assumptions, he shows how real income changes can be bounded without needing direct access to utility functions or introspective data.

In effect, Haberler introduces an *operational definition* of real income change: it is the range of nominal income changes consistent with observed preferences between bundles at different prices. The Laspeyres and Paasche indices, under the stated conditions, provide precisely these bounds. In Haberler's own words:

> "Who decides which income in kind encompasses the greater psychic income, i.e. which provides the greater satisfaction? Is it science? No! It is the economic subjects who prefer the one to the other; the economic subjects decide which income in kind they prefer, and that which the subjects prefer is called by theory the greater real income." (Haberler, 1927, p. 82)

This strategy mirrors the broader move in the logical empiricist tradition to define theoretical concepts in terms of observable operations or testable implications.

At the same time, Haberler's reasoning remains rooted in the Austrian insight that economic phenomena are fundamentally about individual choice, not empirical aggregates. His method takes individual valuations seriously – not by assuming cardinal utility, but by

respecting the revealed structure of preferences as inferred from actual decisions. In this way, his work avoids both the metaphysical pitfalls rejected by logical empiricists and the purely formal abstractions that many Austrians distrusted.

Moreover, Haberler's framework is flexible. It acknowledges that the interpretation of index numbers is purpose-relative and context-dependent – neither fixed by theory alone nor determined entirely by data. The idea that index numbers must be interpreted with reference to the economic agent's goals and constraints reflects a kind of subjectivist pluralism that fits squarely within the Austrian tradition, even as it invites engagement with statistical reasoning and empirical method.

In this synthesis, we find a rare methodological hybrid: an approach that begins from individual choice and subjective value, yet produces formally articulated, behaviorally grounded, and empirically interpretable results. Haberler thus offers an early and underappreciated example of how economic theory can reconcile introspective foundations with observable content - a reconciliation that would later animate key debates in 20th-century economic methodology (Hoover, 2001; Hands, 2001).

4.4 Ideal Assumptions and Empirical Realities

While Haberler's analytical framework offers a powerful synthesis of Austrian subjectivism and logical empiricism, its practical implementation in measuring inflation is fraught with challenges. The strength of his argument lies in its internal logic: given a set of clearly defined assumptions, one can derive meaningful bounds on real income changes based on observable data. Yet many of these assumptions are highly restrictive and difficult to satisfy in real-world contexts.

First, Haberler assumes that preferences, needs, and side conditions (social, cultural, political, and environmental) remain constant across the periods or regions being compared. In practice, however, preferences evolve, consumption patterns shift, and the socio-economic context rarely remains stable. Intertemporal comparisons of price levels thus risk comparing

fundamentally different economic situations - a problem exacerbated by technological change and the continual introduction of new goods and services.

Second, Haberler's framework presupposes the existence of functioning markets in which goods can be freely bought and sold, without distortions from government intervention or other constraints on consumer choice. This requirement is not about perfect competition in the neoclassical sense, but rather about the institutional conditions under which individuals can express their preferences through market transactions. In reality, such conditions are often not met: trade restrictions, price controls, rationing, subsidies, and monopolistic structures frequently interfere with the comparability of observed choices across regions or periods. Moreover, some goods relevant to well-being are not traded in markets at all - such as household production or public services - limiting the scope of price-based comparisons.

Third, the assumption that all income is consumed - i.e., that there is no saving or wealth accumulation - limits the applicability of the argument to particular cases, such as wage earners that are pure consumers. Broader applications, especially those involving capital goods, savings behavior, or investment, fall outside the scope of Haberler's framework and would require more complex intertemporal considerations.

Finally, and perhaps most fundamentally, the subjectivity of value that underlies Haberler's entire approach cannot be fully captured in any price index. As he himself acknowledges, real income is ultimately a matter of individual preference and evaluation, and any aggregation over individuals necessarily abstracts from this core insight. Despite efforts to interpret indices behaviorally, the irreducible heterogeneity of preferences means that any price level comparison must remain partial and approximate.

Haberler was acutely aware of these limitations. Far from undermining his contribution, they highlight the depth of his methodological reflection. Rather than proposing a definitive solution to the problem of inflation measurement, he offers a framework for thinking rigorously about its epistemological constraints. His work thus anticipates many of the concerns raised in later debates over price indices, such as the treatment of quality change,

substitution effects, and the need for context-dependent interpretation.[5]

In sum, while Haberler's synthesis provides a logically coherent and philosophically rich perspective on the measurement of price changes, its real-world application must be approached with caution. The assumptions that enable meaningful interpretation of index numbers in theory are rarely met in practice. Yet by making these assumptions explicit and tracing their implications rigorously, Haberler advances our understanding of both what inflation indices can tell us - and what they cannot.

5 Conclusion

Gottfried Haberler's early work on index number theory, long overshadowed by his later contributions to the theories of international trade and economic crises, deserves renewed attention as a methodological bridge between two influential traditions in twentieth-century economic thought. Rooted in Austrian subjectivism but responsive to the emerging standards of logical empiricism, his 1927 *Der Sinn der Indexzahlen* offers a rare example of intellectual synthesis: one that grounds empirical claims in individual choice without relying on unobservable utility functions, and one that upholds theoretical clarity without sacrificing epistemological modesty.

At a time when many Austrian economists viewed price indices with deep skepticism, and logical empiricists pushed for observable and operationalizable constructs, Haberler sought a middle path. By interpreting the Laspeyres and Paasche indices as upper and lower bounds on subjective price level changes - under clearly specified behavioral and institutional assumptions - he provided a framework that is both conceptually rigorous and empirically interpretable. This approach avoids the metaphysical pitfalls associated with introspective reasoning while preserving the central Austrian insight that economic phenomena are ultimately grounded in individual acts of choice.

[5]For an overview of such concerns in contemporary index number theory and policy, see Boskin et al. (1996), Diewert (1998), and Armknecht and Silver (2012).

In light of this achievement, it is instructive to contrast Haberler's method with later developments in index number theory - particularly the work of Sidney Afriat (2014), whose name is frequently associated with advances in the measurement of real income and inflation. However his solution to the index number problem relies on the construction of a utility function that can rationalize observed choices and thereby derive consistent index numbers. While this approach is formally elegant and has been widely adopted, it comes at a methodological cost. From an Austrian perspective, utility functions are at best heuristic devices, and at worst, fictions that obscure the inherently ordinal, context-dependent nature of preferences. From the standpoint of logical empiricism, the postulation of utility functions - being neither directly observable nor analytically necessary - fall outside the bounds of scientifically meaningful discourse. In this sense, Afriat's solution may be seen as a retreat from the very epistemic standards that Haberler sought to uphold. His work, far from being superseded, offers a compelling alternative to approaches that rely too heavily on idealized constructs.

Haberler's synthesis remains significant not only as a historical episode but as a methodological model. In an era where economic theory often oscillates between formal abstraction and empirical instrumentalism, his work reminds us that meaningful measurement must remain grounded in real behavior and plausible interpretation. By reconciling introspective foundations with observable content, Haberler offers a vision of economics that is at once scientifically disciplined and philosophically coherent - a vision still worth recovering today.

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