

Costs and Benefits of Diverse Plurality in Economics

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Abstract

The literature on pluralism in economics has focused on the benefits expected from the plurality of theories, methods, and frameworks. This overlooks half of the picture: the costs. Neither have the multifarious costs been systematically analyzed in philosophy of science. We begin rectifying this neglect. We discuss how the benefits of plurality and diversity in science presuppose distinct types of plurality and how various benefit and plurality types are associated with different types of costs. Finally, we ponder how the general mechanisms that give rise to the costs of plurality and diversity are aggravated by various disciplinary characteristics of economics.

Keywords

pluralism in economics, costs and benefits of diversity, economics of science, institutions

1. Introduction

The rise in the popularity of pluralism in economics shows no signs of halting. The number of papers published yearly on pluralism in economics has been steadily rising for the last two decades or more (for an early collection, see [Salanti and Screpanti 1997](#)). Besides heterodox economics in which

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“pluralism” has been a buzzword for quite some time (e.g., [Norgaard 1989](#); [Söderbaum 1992](#)), the worries about excessive intellectual uniformity in economics have recently started reaching the elite journals of the discipline ([Akerlof 2020](#); [Heckman and Moktan 2020](#)).

The calls for pluralism receive support from philosophers of science. It has become widely accepted that various sorts of plurality and diversity may yield epistemic benefits for both the natural and social sciences (see e.g., [Rolin 2019](#); [Rolin et al. 2023](#)). Many economic pluralists have noticed this, and so pluralist accounts of science such as those by Helen [Longino \(2002\)](#), Hasok [Chang \(2012\)](#), and Ronald [Giere \(2006\)](#) have secured a place as popular references in the pluralism-in-economics literature. Much less (often no) attention has been paid in these literatures to the downsides of plurality and diversity—including possible risks, harms, hindrances, and extra efforts associated with them.

In this paper, we start outlining a framework for the endeavor of thoroughly analyzing the drawbacks, challenges, obstacles, and side-effects related to plurality and diversity in economics. These counterbalances of the respective benefits can be conceptualized as the *costs* of plurality and diversity. The costs come in many varieties, depend in complex ways on the kinds of plurality and diversity present in economics, and they affect, and are affected by, various institutional arrangements in science, including economics.

While the cost side of plurality and diversity has been occasionally mentioned in the literature, it has not been previously analyzed in a focused and systematic manner (see e.g., [Kitcher 1993](#); [Rolin et al. 2023](#); and in the case of economics, [Mäki 1999](#); [De Langhe 2010](#); [Zamora Bonilla 2012](#); [Gräbner and Strunk 2020](#); [Ambrosino, Cedrini, and Davis 2021](#)). Here we propose doing just that, offering a programmatic opening for a systematic analysis. As the vast size of the literature on the benefits of plurality and diversity should make clear, however, the respective costs cannot be thoroughly explored in one paper. We start mapping the most relevant concepts and considerations that a full account of the cost side should incorporate. In this paper, our discussion will have a special focus on economics. However, in further research, the considerations can and should be transferred, *mutatis mutandis*, to other areas of science.

The paper is organized as follows. [Section 2](#) starts by elaborating the fundamental concepts and distinctions—those related to *plurality* and *diversity*—needed for discussing the substance of this paper with due precision and nuance. [Section 3](#) reviews the *types of benefit* that have been associated with plurality and diversity in science, and for each type of benefit it considers which *type of plurality and diversity* it presupposes. [Section 4](#) then introduces various *types of cost* that are related to plurality and diversity in science. [Section 5](#) links these concepts together by discussing why each potential benefit tends to be associated with a distinctive *cost profile*. [Section 6](#)

considers how the mechanisms behind the costliness of plurality and diversity depend on various *contextual and discipline-related factors* and how in economics certain cost-aggravating factors might be particularly strong.

Section 7 briefly discusses further questions which our analysis highlights and helps to articulate but which deserve a study of their own. Among these is the question of who or what bears the costs and who or what reaps the benefits of plurality and diversity. Furthermore, this paper focuses on epistemic plurality and diversity: those of theories, models, approaches, schools of thought, frameworks, paradigms, and so on. These are among the “plural items” that are discussed in large parts of the pluralism literature in philosophy of science, including economics. Various kinds of social, demographic, and axiological plurality and diversity (typically discussed under the label of “diversity” rather than “plurality”) are important topics but we must leave them for another paper.¹ Due to space limitations, we also need to make the idealizing assumption that social and demographic attributes of scholars do not affect the costs they incur from epistemic plurality (an unrealistic assumption, see [Fehr and Jones 2022](#)).

2. Plurality, Diversity, Pluralism

Given the plurality and diversity of usages of the relevant terminology in the literature, it will be useful to propose a clarification that will help keep the terms under systematic control. Our exposition is brief and schematic, but we provide some sporadic illustrations from the literature on pluralism in economics.

First, to understand what “pluralism” is, or should be, taken to mean, we must begin with the concept of plurality. The *plurality* of some items X is a matter of there being many of them, such as more than one. *Pluralism* then is a thesis or principle or attitude about that plurality. Pluralism may say a variety of things about plurality, such as descriptively *recognizing* a plurality of Xs; or normatively *evaluating* such a plurality as appropriate; or normatively *prescribing* that there should be more of it (see [Mäki 1997](#) where the distinction between plurality and pluralism was first drawn in this way).

Keeping plurality and pluralism distinct in this way helps identify the need for grounds or arguments for the thesis, principle, or attitude that entails a pluralist description, evaluation, or prescription about plurality. It also helps see that plurality and pluralism may go their own ways, so that there may be one without the other. On the one hand, there may be plurality without (normative) pluralism. This would be the case if the actually prevailing

¹See the recent *Synthese* topical collection “Social and Cognitive Diversity in Science” (especially [Rolin et al. 2023](#)), for an up-to-date overview of the discussion on types of diversity not discussed in this paper.

plurality of some Xs would not be judged positively, but the recommendation would rather be to have fewer Xs, perhaps all the way down to just one. Expressions of this attitude can occasionally be observed in some social science disciplines that may at times accommodate a flourishing multitude of schools and paradigms (see [Gintis 2007](#)). On the other hand, there may be pluralism without plurality as when a plea to have a larger number of Xs will not be implemented. Whether the plea for pluralism in economics published in the *American Economic Review* three decades ago ([Hodgson, Mäki, and McCloskey 1992](#)) ever had any impact is debatable.

Let us then clarify the difference between plurality and diversity; that there indeed is a difference is often missed and the two become conflated. We are talking about *plurality* when we refer to the *number* of Xs, while *diversity* is a matter of *differences* between those Xs. It is obvious that most of the talk about pluralism in economics and elsewhere is not about what we may call *plain plurality*, namely having more of the same. Plain plurality is thus plurality without diversity. What we call *diverse plurality* means there being many different things. Diverse plurality is thus plurality with diversity. This is the notion that starts having relevance for the debates now underway under the title of “pluralism in economics” ([Courvisanos, Doughney, and Millmow 2016](#); [Decker, Elsner, and Flechtner 2019, 2020](#); [Fischer et al. 2017](#); [Fullbrook 2008](#); [Garnett, Olsen, and Starr 2010](#)).

But more nuance is needed. We need to ask, How many? How different? And these questions must be asked both descriptively and normatively. We may have a large number of closely related yet slightly dissimilar theories (variations of the same core theory, as some could say), hence displaying a combination of *large plurality* and *small diversity*. It is not straightforward to determine how this compares with having just a few very dissimilar theories—such as two radically different rival schools of inquiry in a field—exhibiting a combination of *small plurality* and *large diversity*. A general or abstract plea for greater diverse plurality does not distinguish between such cases. This is an ambiguity that seems to underlie much of the talking past each other. Economists happy with the current situation repeatedly accuse the pluralists of being uninformed about the plurality in economics ([Becker et al. 2017](#); [Coyle 2007 \[2009\]](#); [Tirole 2017](#)), and the critics try to voice how the plurality they call for differs from the plurality already existing in economics. While pluralists have clarified what their various respective positions are pluralist about—such as methodologies, epistemologies, and/or ontologies ([Gräbner and Strunk 2020](#); [Heise 2020](#); [Mearman, Guizzo, and Berger 2018](#))—additional clarity would be achieved by making the difference dimension explicit and keeping it separate from the other dimensions introduced below. Anyway, these are issues that will be very relevant to our concerns about the costs of diverse plurality. Those costs depend on degrees of both plurality and diversity. In what follows, we mostly use “plurality” as a shorthand for *more or less diverse plurality*.

For focused and systematic arguments, we not only need to be clear about “plurality” and “diversity,” but also about *what X* we are referring to when talking about the plurality of Xs and the diversity among Xs.² Science involves many things of which there can be a diverse plurality, but, as noted in the introduction, in this study we will focus on things like theories, models, approaches, schools of thought, frameworks, and paradigms.

For an informed and informative analysis of the costs and benefits of diverse plurality, we need to expand our framework further. Our dimensions of plurality and diversity range not only over numbers of items and degrees of their diversity, but they also feature various other kinds of relevant relationship between the diverse plurality of items. Here is a list that will be used in later sections:

2.1. Small Number of Xs – Large Number of Xs

This dimension is dependent on specific identity conditions for individuating distinct items. Each set of such identity conditions will result in a different number of Xs. As an example, substantial amount of ink has been spilled on whether the inclusion of new institutional and behavioral economics into the mainstream of economics counts as a real shift toward more plurality or whether these schools are after all too similar to count as really distinct.

2.2. Minor Diversity – Major Diversity

Since it would seem obvious that each type of X is associated with its characteristic measure of difference, this dimension in fact must be a multiplicity of dimensions, one for each type of X. The differences between models are different from the differences between, say, schools of thought.

2.3. Interactive Xs – Autonomous, Co-Existing Xs

Whether the items merely co-exist (at the extreme, totally isolated from each other) or whether there is interaction between them has consequences for the relevant costs of diverse plurality. Additionally, regardless of interaction between *researchers* working on various Xs, plurality may be accompanied

²Possibilities range widely, from Concept, Model, Theory; Goal, Purpose, Question, Problem, Agenda; Criterion, Standard, Principle; Type of evidence, Technique, Method, Approach, Capability; Explanation, Prediction, Scenario, Diagnosis, Policy advice; Framework, Perspective, Paradigm, School, Tradition; Language, Culture, Ethnicity, Gender, Age, Institutional affiliation, Geopolitical position; to Value and Ideology.

(or not) by knowledge integration activities by the knowledge *users* (Chang 2012; Mitchell 2002), which has implications for costs (sect. 5).

2.4. X_i and X_j as Complements – As Rival Substitutes

At one end of the spectrum, there can be a plurality of X s that are perfectly compatible and in harmony with each other: theories about distinct domains, model variations developed for describing different aspects of one phenomenon, methodological approaches whose proponents do not claim their favorite one to be superior to others, and so on. At the other end of the spectrum there are X s that stand in various rival relations. The extent and intensity of tension, friction, competition, or conflict between the X s, central to the analysis presented below, comes in several varieties: The conflict can be representational, or semantic, as when X s offer representations or make claims that both cannot be accurate or true. It can be a conflict over practical recommendations and policy authority, as when theories or problem descriptions highlight totally different problem solutions. Or it can be competition over resources, as when (scholars of) various research programs compete over limited funding and try to convince important audiences of their superior qualities vis-à-vis their rivals. For the purposes of this paper, let us call the compatible and harmonious X s *complements*, and the rival X s, *substitutes*.³

2.5. Debate for Defeat – Debate for Improvement

In case there is interaction and it is between rival substitutes, it may take on the form of debate. The aspirations of this debate may be multifarious, such as aiming at defeating and eliminating the rival item, or using debate as a learning mechanism whereby all participant items have a chance of improvement. Evidently, the latter is more hospitable to diverse plurality.

We have now outlined a simple framework of notions of plurality and diversity that will contribute to a systematic account of the costs and benefits of diverse plurality in economics. In the next two sections, we organize our thoughts about the benefits and the costs.

3. Epistemic Benefits of Plurality

In this section, we identify four major types of benefits that have been ascribed to plurality—sometimes as an essential part of a (prescriptive) pluralist

³For clarity, it is advisable not to lump the complement/substitute dimension together with the diversity dimension (cf. Gräbner and Strunk 2020; Heise 2020). There may be complements relatively different from each other and substitutes relatively similar to each other.

argument, sometimes simply as detached observations about the dynamics of science. Building on the dimensions of plurality outlined in [section 2](#), we consider the types of plurality that are presupposed by each benefit.

3.1. Comprehensiveness Benefits

Some presumed benefits associated with a plurality of approaches, theories, models, perspectives, and other Xs revolve around the intuition that plurality allows for producing more *comprehensive* knowledge.⁴ Comprehensiveness in itself is an almost hopelessly ambiguous characteristic to serve as a desideratum. To make use of it, let us clarify the notion in terms of explanation (with obvious implications for theories, methodological approaches, etc.).

Consider first maximizing the comprehensiveness of *explananda*. This comes in two versions, with opposite implications for hospitality to diverse plurality. The first is the traditional idea of explanatory unification whereby science aspires to expand the range of types of phenomena explained by a simple theory, by showing that the phenomena are similar and only apparently diverse. This is a powerful disciplinary convention in economics (see [Mäki 2001](#); [Mäki and Marchionni 2009](#)), and the principle lies behind the controversial ambition of economics imperialism whereby economic theory is being used for explaining phenomena traditionally considered sufficiently different to belong to the domains of other disciplines—such as marriage, crime, religion, and addiction (see [Mäki 2009](#); [Mäki and Marchionni 2011](#)). Quite obviously, such a unificatory comprehensiveness of *explananda* is an expression of monistic uniformity, hence it is *not* among the virtues supposedly promoted by diverse plurality. In this respect, economics has an in-built propensity to go against diverse plurality.

The second version does not require such unification by one given theory, but rather advises to increase the range of diverse *explananda* by invoking or constructing whatever distinct explanatory resources are needed for each *explanandum* separately. This creates room for diverse plurality not only among *explananda* but also among *explanantia*.

Indeed, the comprehensiveness of the set of *explanantia* is promoted by diverse plurality. Many non-economists and non-mainstream economists argue that streamlined self-seeking rational choice based on stable preferences is too narrow as an explanatory principle. More is needed, such as culture and institutions, social norms and individual cognition, power and custom, political context and other historical contingencies, and the like. Insofar as these cannot be subsumed under standard economic principles, a claim is implied

⁴Perhaps it is illustrative that one of the notable hubs of pluralist economic research, at Johannes Kepler University Linz, is named the *Institute for Comprehensive Analysis of the Economy*.

for diverse plurality among the *explanantia*—with intellectual sources that may lie beyond the discipline of economics.

How is the role of such an extended set of *explanantia* to be understood? It cannot be that for each explanation, the whole comprehensive set is put to do explanatory work. The set is rather to be understood as a pool of potential explainers that is accessed for a selection that is required for explaining this or that fact about some phenomenon. The selection of explainers is based on assessments of explanatory relevance, and these may be based on assessments of causal or some other kind of ontic relevance—while items in the pool not selected are judged explanatorily irrelevant to the given *explanandum*. Much also depends on whether token facts or type facts are being addressed. Token facts typically require more, and more detailed and diverse, explanatory information to be explained (predicted, controlled, etc.) than do type facts.

Next we ask, what kinds of plurality are needed for giving rise to such comprehensiveness benefits? It seems obvious that the plural items had better be complements rather than rival substitutes, otherwise they may not comfortably constitute a comprehensive set.

Comprehensiveness benefits may or may not require much interaction between researchers at the knowledge production stage. Proponents of each theory or empirical method may work on their respective favorites, jointly producing knowledge on various domains. Hence autonomous plurality may be enough for comprehensiveness to come about. But once we consider the agents that are supposed to practically *benefit* from the comprehensiveness, interaction of some sort may be needed. The agents to benefit from comprehensive knowledge—such as policymakers (Dow 2007, 2012, 2019; Van Dalen 2007)—need to possess the relevant composite knowledge of particular (token) situations, and this requires collection, evaluation, absorption, and some sort of integration of the diverse and often detailed knowledge that is available or forthcoming.

As regards the degree of diversity between the items, we have seen that it depends on the version of comprehensiveness one has in mind—the ideal of comprehensive explanation conceived as the ideal of explanatory unification requires uniform *explanantia*, while the ideal of a comprehensive pool of potential *explanantia* recommends them to be suitably diverse.

To sum up, comprehensiveness benefits (in the sense of having a comprehensive pool of potential *explanantia*) are often best achieved with *a diverse plurality of complements*.

3.2. Insurance Benefits

Diverse plurality may yield the benefit of providing insurance against uncertainty. The epistemic success of any one line of inquiry is uncertain *ex ante*. The success is also uncertain *ex post*—a popular theory, model, or belief may

be rejected as erroneous or otherwise limited even after having enjoyed confidence for decades. Moreover, the future may give rise to unforeseen epistemic needs that may not be served by the line of inquiry that currently satisfies our present interests best. Finally, an additional complication for the social sciences is that, even if our epistemic interests stay the same, the social world itself may change and render the currently best theory or approach obsolete or insufficient (Dow 2007; King 2013).⁵

The degree of difference among Xs needed for insurance benefits depends on the kind of risk that insurance is sought against. Generally, the alternatives should be different enough not to fail together, that is, the failure of one option should not instigate the failure of its (close) alternative (Dow 2007). However, different failures or inadequacies call into question theoretical choices made at different levels. The risk of a poorly chosen functional form can be alleviated by having models with alternative functional forms already constructed or readily available for construction. The difference between models does not need to be a fundamental one. In contrast, to insure against deficiencies of a complete theoretical approach, one needs altogether different approaches, implying a diversity of possibly highly heterogeneous models.

Insurance benefits do not require high amounts of collaboration, critical exchange, or other forms of interaction between researchers with the various lines of inquiry. Some non-zero level of information flow is needed, however, to ensure that researchers have sufficient awareness of the other lines of inquiry, should their favorite one fail.

In case one line of inquiry fails, another can only substitute for it if it is indeed a substitute that proposes an alternative and competing answer to the same question, representation about the same target, or strategy to solve the same problem. For example, a plurality of complementary models that yields comprehensiveness benefits—say, one model for understanding competitive markets and another for noncompetitive markets—will not yield any insurance benefits. If the noncompetitive model turns out to be inadequate for understanding a particular market with a peculiar kind of monopoly situation, its complement, the competitive model, cannot do the job either, as it does not even aim to represent monopoly markets.

⁵In philosophy of science, Philip Kitcher is a notable proponent of the insurance benefits of plurality (Kitcher 1990). This focus is also exemplified by the more recent work on the benefits of “transient diversity” in science (e.g., Borg et al. 2019; Zollman 2010). The key idea here is that the pursuit of diverse lines of inquiry should last long enough to identify and explore all relevant alternatives for the correct theory worth a consensus, after which diversity will have provided its service. Hence the transience of diversity.

To sum up, the insurance benefits presuppose *co-existing substitutes*, with more or less diversity depending on the risk that the insurance is supposed to cover.

3.3. Stimulation Benefits

Diverse plurality is sometimes seen as a potential accelerator or stimulant of inquiry, for various reasons. Some envision *competition* among many lines of inquiry or research programs as a driver of efficient intellectual production in the service of scientific progress, just as neoclassical economics sees the competition among firms as a driver of efficient market production that serves consumers (Chang 2012). Here we focus on a more popular line of argumentation, one based on the metaphor of *cross-fertilization* of ideas. A popular view is that researchers have access to a larger pool of potentially helpful intellectual resources—modeling approaches (Lari 2021), metaphors (Hodgson 1997), concepts (Kapeller and Schütz 2013), and so on—when there are several intellectual traditions and lines of inquiry to adopt ideas from.

The greatest stimulation benefits seem to require a substantial degree of diversity. Mere exposure to ideas that are very similar to those one already has arguably does not stimulate thought in new directions as fruitfully as unfamiliar and surprising influences have the potential to do.

Cross-fertilization may yield some benefits without much interaction, such as when an individual researcher gets an initial idea for a new and fruitful research direction by drawing inspiration from a metaphor adopted from another context (Hodgson 1997). However, additional benefits can be expected from communication and cooperation among experts from different domains. The experts of the field “fertilizing” another one with its methods, techniques, and other resources are likely to be the most skilled ones using those resources. Furthermore, the amount of work needed to explore all possible fruitful ways to bring together ideas from different paradigms may be so great that concerted efforts are needed (Dobusch and Kapeller 2012).

Cross-fertilization is possible between both substitutes and complements. As Hasok Chang (2012) notes, proponents of one line of inquiry (or “system of practice” in his terminology) may take heed of results and solutions achieved (and, we may add, concepts and methods used) by other researchers, including those developing competing lines of inquiry.⁶ Cross-fertilization may be even more far-reaching when researchers

⁶This is of course sensitive to how the concepts are used: one of us has suggested (in Lari 2021) an alternative terminological convention according to which a school of thought that provides helpful intellectual resources for another is by definition complementary to it.

from different lines of inquiry perceive their relations not as competitors but as collaboration-fit complements. The quest for understanding better the complementarities of, and opportunities for cooperation between various approaches, theories, methods, and perspectives in economics has indeed been a major focus of attention in the pluralist literature (Berik 1997; Dobusch and Kapeller 2012; Gräbner 2017; Keller 1983; Kronenberg 2010; Lari 2021).

To sum up, stimulation-through-cross-fertilization is achieved through *interactive and diverse plurality*, whether of substitutes or complements.

3.4. Reliability Benefits

Finally, plurality has been associated with increased reliability of the produced knowledge. This can happen through various mechanisms, each of which requires its own type of plurality. In what we might label the *reliability-through-criticism* account, reliability is seen to improve when the knowledge-producing community improves and exercises its capacity to test knowledge claims more thoroughly than before. Cognitive diversity helps the epistemic community to do this, because implicit and possibly problematic assumptions can best be spotted and challenged by those who do not share them (Longino 1990, 2002). In economics, the critical exchanges between proponents of different theoretical approaches have also been argued to increase clarity about the limitations of each approach (Larue 2022), which also contributes to reliability.

According to the reliability-through-criticism account, the greatest epistemic benefits are achieved with high diversity. This ensures that knowledge is screened for errors, biases, and other flaws as thoroughly as possible. Needless to say, substantial interaction is needed for any benefits premised on criticism. One-way economics-bashing is not enough. Criticism must also be received and scrutinized by the criticized.

The reliability benefits arguably best emerge from a plurality of rival substitutes. Proponents of complementary theories can challenge each other's assumptions and reasoning but the intellectual environment most conducive to thoroughgoing criticism is one in which the target of criticism is seen as an opponent, competitor, challenger, or the like. The time frame of the benefits—temporary or long-term—depends on whether the criticism results in the elimination of its target—as in debate for defeat—or whether it is part of an ongoing critical exchange—as in debate for improvement.

In sum, the reliability-through-criticism account suggests that reliability is best served by a *diverse and interactive plurality of substitutes*.

Reliability benefits can also emerge from other types of plurality. Reliability can be increased through triangulation when a complementary plurality of methods yields the same result (Kuorikoski and Marchionni 2016). According to proponents of “evidential pluralism” (Russo and

Williamson 2007; Shan and Williamson 2022, 2023), reliability of causal claims can be increased by considering a complementary plurality of types of evidence. These scenarios do not necessarily presuppose much interaction between researchers, *if* a broadly knowledgeable lone researcher has all the skills required for using the needed methods and for producing and analyzing the needed types of evidence. Moreover, the plurality of methods and evidence types used are not substitutes but complements in this case.

4. Types of Cost

Various concepts of cost play essential roles in different parts of economics in providing accounts of how the economy works. These parts range from theories of the firm to theories of welfare and institutions, from public to labor to international economics. Here we apply a selection of cost concepts to economics itself, reflexively as it were (cf. Mäki 1999). We ask: what sorts of cost may accrue due to diverse plurality in economics itself, if pluralist demands for diverse plurality were implemented? It is obvious that in case of failure of implementation, one possible explanation would cite its (expected) costs. Our selection includes production costs, search costs, evaluation costs, interaction costs, authority costs, and opportunity costs.⁷

4.1. Production Costs

Production costs include resources (time, effort, equipment, etc.) required for creating and refining any plurality of diverse Xs. We can suggest a few further observations on how and why the types of plurality affect the amount of production costs.

The application of already available old ideas is cheaper than inventing new and different ones. Thus we should allow for *economies of scale* to

⁷The categories of costs are not meant as mutually exclusive. Sometimes, search, evaluation, and interaction costs could be alternatively understood as sub-categories of production costs, when the search and evaluation of, and interaction among, some existing Xs are a part of the production of novel Xs. However, production costs do not reduce to search, evaluation, and interaction costs: in addition to search, evaluation, and interaction activities, researchers put costly time and effort to their creative thinking and writing, to designing and conducting experiments, and so on. Moreover, some search, evaluation, and interaction costs are not easily characterizable as production costs: for example, the time spent on criticizing a rival theory may result in increasing rather than decreasing the resources available for productive research. Our purpose in developing a rough cost taxonomy is to underscore the variety of factors that may hold back the development of diverse plurality in economics, and to facilitate discussion on the variety costs and what may be done to ameliorate them.

enter the production process. For example, sometimes a modeling approach or template can be used for many purposes with low effort by making small variations in the original model. This is standard practice in economics—by re-estimating relevant parameters, one can apply a model of a given market to another market with sufficiently similar characteristics. This is relatively efficient use of production costs. At the other extreme, solving each new problem by creating a new model from scratch results in a greater diversity of models but at the expense of higher production costs.

Even when several approaches are already available for problem solving, differences in productivity remain. Approaches that are well established and standardized use production costs more efficiently than approaches that are more novel or still in their infancy (in terms of refinement and reliability—not in terms of years since their inception). In the former, decisions in the research process can be made routinely by following tried-and-tested protocols, while novel approaches require frequent stopping to think and rethink things through. The lack of standardized approaches also makes production less efficient due to a reason related to the social nature of scientific inquiry: as [Hodgson \(2019\)](#) has argued, heterodox economics is a community so diverse that conferences and other sites of potentially productive interaction often do not include many people who share the same research approach. This results in researchers not receiving much informed criticism, competent comments, and other crucial cognitive inputs in the intellectual production function.

As for the dimensions of plurality discussed in [section 2](#), two are especially consequential for production costs. We can first conjecture that, *ceteris paribus*, the higher the number of Xs to be produced, the higher the *overall production costs*: each additional X requires resources to be produced, though economies of scale might affect this, as noted. However, the pluralism question in economics mostly does not concern whether to stay content with the number of models and theories available or whether to invest in producing more of them. Rather, the question is whether the new scientific production that in any case takes place should be directed toward *similar* models, theories, and explanations as before, or toward *different* ones, resulting in increased diversity of theories, models, and explanations. We can then conjecture that, *ceteris paribus*, more diversity among Xs tends to be associated with greater production costs. To see why, consider what would happen to production costs if economics were diversified by allocating more resources to the currently marginalized approaches: a greater share of the intellectual production would take place in research programs that due to their precarious status are not well established and standardized. Possibly, some marginalized approaches are also not

developed enough to exhibit significant economies of scale. For these reasons, we can conclude that diverse plurality tends to be *production-costly*.

4.2. Search and Evaluation Costs

Search costs consist of the resources required for searching through the diverse plurality of Xs and for identifying and selecting the ones to work on, to pursue; to collaborate with, to engage in integrative efforts (case of complements); to argue with, to engage in controversy (case of substitutes).

Evaluation costs include resources required for evaluating the potential partners (scientists, theories, etc.) for their worth in collaboration and integration or in debate and controversy. It is evident that search and evaluation often go together as a matter of actual fact—search results in a relevant finding once evaluation has also been completed—but they can be at least analytically kept apart.

Again, we suggest a few observations about how types of plurality result in different search and evaluation costs. *Ceteris paribus*, the higher the number of Xs is, the higher are the search and evaluation costs, as one needs to search through a larger number of options and consider the advantages and disadvantages of each option for further action.

Furthermore, diversity tends to increase the time and effort needed for search and evaluation. For example, the more dissimilar methods or models are, the harder it is to evaluate and rank them regarding their suitability to a given task. The more heterogeneous the work of a group of scholars, the harder it is to evaluate and rank their merits. The latter point is given by the economist George Akerlof (2020) as a potential explanation of why economists so unanimously endorse the ideal of standardized “hard science” over scientific ideals that involve more subjectivity, interpretation, and individual judgment: hiring committees make their work significantly easier by using uniform standards. The increased laboriousness of evaluating the quality of research might also have negative epistemic consequences. As scientific quality control gets costlier with increased diversity, the question arises whether it is viable to keep on holding to as stringent quality standards as before (Gräbner and Strunk 2020).

Also, the degree of interaction between the Xs is consequential for search and evaluation costs. Only the kind of plurality that involves interaction between approaches involves searching and evaluating collaboration or debate partners among proponents of the approaches unfamiliar to oneself. As noted, differences among the participants of interaction further increase the costs. Forms of plurality with little interaction among diverse approaches and perspectives are not burdened by sizable search and evaluation costs. The fact that mainstream economics does not actively consult—or only very

selectively consults—other disciplines and heterodox economics (Glötzl and Aigner 2018; Pieters and Baumgartner 2002) is cost-efficient in this sense, regardless of how one normatively judges such a sparsity of interaction.

We can conclude that diverse and interactive forms of plurality are *search-costly* and *evaluation-costly*.

4.3. Interaction Costs

Interaction is a broad category that we take to include active relationships such as communication, persuasion, negotiation, debate, reconciliation, integration, and collaboration. Interaction costs then consist of resources required for activities such as giving and taking criticisms (presupposing deeper learning about all parties, possibly engaging in long-lasting conversations and controversies); overcoming communication issues due to variation in meanings and methods, styles and standards, etc.; identifying precise relations between Xs (e.g., complementarities or rivalries); identifying their strengths as well as limitations and flaws.

Interaction costs tend to increase with the amount of interaction between diverse Xs. Economics, like all science, is social activity, so some interaction costs are always involved. Even in “isolationist” (Van Bouwel 2014) or “disinterested” (Dobusch and Kapeller 2012) forms of plurality in which lines of inquiry, approaches, or perspectives merely co-exist without substantial collaboration or criticism *between* them, interaction takes place *within* them. But debate, collaboration, and the rest of interaction tend to be more costly between diverse Xs than among researchers working on or within a shared X.

It also seems clear that, *ceteris paribus*, the higher the number of mutually interactive Xs is, the higher are the interaction costs. The more numerous the theories and perspectives that participate in criticism and collaboration, the more resources the interaction requires. Moreover, the higher the degree of diversity among the interacting Xs is, the higher are the costs (cf. Gräbner and Strunk 2020, 312). For example, interaction between the two highly different schools of neoclassical economics and ecological economics has proven to be prone to misunderstandings and conceptual complications (Couix 2019).

We conclude that diverse interactive plurality is *interaction-costly*.

4.4. Authority Costs

We propose a separate category of costs that is associated with (scientific and/or social) authority. Authority costs include resources *lost* due to loss in authority, prestige, and credibility; and resources *required* for creating, protecting, maintaining, and regaining authority (and its relatives). Authority costs arise in a

variety of situations, from those that appear as autonomous co-existence of detached theories or schools, to those with overt rivalry. The latter may be particularly costly. If there is a large number of alternative perspectives, competing for attention and acceptance, this may result in reduced authority of all parties and in higher costs in keeping it at tolerable levels. Publicly visible critical interaction may make a difference: the more overt debate and conflict there is, the more the authority-granting audiences become aware of the dissent and the more effort it takes to ensure their respect for the scientific authority of the rival parties. High levels of publicly recognized uniformity and consensus, on the other hand, can be expected to be associated with lower authority costs, *ceteris paribus*.

Concerns over authority costs manifested in the post-WW2 campaign for recognizing economics as another “science” to be covered by USA’s National Science Foundation. This ambition was not helped by the impression of diverse plurality within economics, heritage of the “interwar pluralism” of high theory, statistical studies, and institutional inquiries—partly autonomous, partly critical of each other. As Craufurd Goodwin (1998, 67) argues, this campaign helped “the leaders of the discipline to recognize that they would pay a heavy price for the appearance, let alone the reality, of pluralism.” That price was an authority cost that subsequently was reduced by reducing diverse plurality within the discipline.

A more recent worry about the authority of economics being threatened by a lack of uniformity and consensus is expressed by Jean Tirole (2017, 75). He is alarmed by the possibility that if the affiliation of economists with “a political cause or a school of thought” becomes public, economics will “run the risk of being perceived as a science with no consensus of key questions, meaning economists’ views can be safely ignored.” He further worries that “If there were no majority opinion, financing research in economics would be hard to justify.” Being ignored and not being funded are the costs of reduced authority due to higher diversity.

We conclude that having a large diverse plurality (especially of rival substitutes in open debate) tends to be *authority-costly*.

4.5. Opportunity Costs

Finally, we import the simple idea from economics that whatever we choose to do will entail foregoing the benefits of alternative lines of conduct that we did not choose. These foregone benefits are the opportunity costs of our choices. Applying this idea to our case, we can say that by using resources for producing, refining, or cultivating a particular X one *foregoes the opportunity* of using the resources for producing etc. something else. In brief, *benefits* of the missed-out alternative = *costs* of the selected alternative.

The concept of opportunity cost is a flexible notion in that it cuts in all directions. Whatever we do or choose, it will have opportunity costs. Hence, if

we choose to go for diverse plurality, its opportunity costs include the benefits of a foregone alternative, namely *monistic uniformity*. These benefits that may derive from the *lack* of diverse plurality include things such as economies of scale in the production of knowledge, smooth communication between economists, relatively routine quality control, and easy-to-retain authority. In other words, low production, search, evaluation, interaction, and authority costs are the opportunity costs of diverse plurality—the advantages missed by not choosing monistic uniformity.

On the other hand, monistic uniformity has its own opportunity costs, those that consist of the benefits of diverse plurality. So, for example, even if one has a very productive and efficient method for producing new knowledge from one limited perspective, one misses knowledge that would require using other methods and viewing the world from other perspectives. In other words, the missed comprehensiveness, insurance, stimulation, and reliability benefits are the opportunity costs of monistic uniformity.

We can conclude that both diverse plurality and monistic uniformity are *opportunity-costly* and that the respective opportunity costs are different in contents and pull in opposite directions.

5. Connecting Costs and Benefits

Thus far we have noted that the various benefits of diverse plurality require suitable types of plurality. Likewise, we have pointed out that the incurrence of various types of costs depends on the type of plurality at hand—specifically, on the number, diversity, degree of interaction, and rivalry of the relevant Xs. In this section, we connect these considerations with each other to gain a tentative insight into how the costs and benefits of plurality are interrelated. Any desired benefit presupposes a suitable plurality type, which in turn comes with its characteristic cost profile.

5.1. Comprehensiveness Benefits

As discussed in [section 3](#), comprehensiveness benefits (in the sense of having a comprehensive pool of potential *explanantia*) are best realized with a diverse plurality of complements. The diversity required implies that the emergence of significant comprehensiveness benefits tends to generate high production costs. We also noted that if anyone is to really benefit from science being able to explain any part of the world comprehensively, relevant agents need to be in a position to collect, evaluate, and absorb the information valuable to them. This means that the comprehensiveness benefits of diverse plurality are search-costly and evaluation-costly.

5.2. Insurance Benefits

Insurance benefits presuppose co-existing substitutes, with more or less diversity depending on the risk that the insurance is supposed to cover. High diversity is required for insuring against failures of a research program, which may be production-costly if the diversity requires investment in research programs that are less productive for example due to being less established and standardized. Insuring against smaller failures like model inadequacies is less costly as less diversity is needed. Some search and evaluation costs result from the fact that researchers need to be informed about the potentials of alternative lines of inquiry were their favorite one to fail.

As regards authority costs, an overt substitute relation is susceptible to give rise to some, as discussed in [section 4](#). Insurance against the failures of a specific model is not that authority-costly, as it only requires the co-existence of minor variations of the model. However, insurance against fundamental inadequacies of a research program necessitates the existence of a competing one, which might be enough to raise questions about the reliability, maturity, or even “scientificity” of the discipline in question. On the other hand, insurance benefits do not require conflict and debate, so the relevant audiences may not become aware of the dissent, thus authority costs are kept down.

5.3. Stimulation Benefits

As noted in [section 3](#), cross-fertilization can happen without much interaction, whether between substitutes or complements. Yet an effective form involves collaboration and exchange of ideas across complementary theoretical and methodological approaches. Costs of search, evaluation, and interaction result from the need to find collaborators with suitable academic competencies, to evaluate the likely fruitfulness of possible mixes of methods and approaches, and to overcome any communication difficulties that arise. A high degree of diversity also increases search and evaluation costs regardless of the amount and kind of interaction between researchers: while it may be that new and unfamiliar ideas hold the greatest stimulative potential, it is also harder—hence more costly—to recognize the relevance and potential of unfamiliar ideas than those of familiar ones. The kind of interaction may also make a difference: it may be more costly to engage in solid collaboration between diverse collaborators than, say, merely to borrow a promising idea from another paradigm.

5.4. Reliability Benefits

Finally, let us consider the reliability benefits that increased cross-perspectival criticism is expected to yield. The reliability-through-criticism scenario

presupposes a diverse, interactive plurality of rival substitutes. For criticism to do its epistemic job, there must be a plurality of perspectives, approaches or theories that are in tension with each other, proponents of each trying to find flaws and limitations in their rivals. This is the form of plurality that is most susceptible to creating an impression of disarray and fragmentation, thus counteracting efforts to create and defend scientific authority.

The diversity required for reliability benefits is likely to come with high production costs. The epistemically fruitful criticism is more likely to happen if on both sides of the debate there is an active research community. Enough competent scholars with up-to-date knowledge and sufficient resources are required on each side, and this is likely not true should one side be represented by a nearly-defunct research program. And, as noted before, the pursuit of several diverse lines of inquiry, some of which are less standardized and well-developed than others, tends to be more production-costly than the sole existence of one particularly efficient one.

As in the pursuit of stimulation benefits, high costs of search, evaluation, and interaction are involved here. Identifying worthwhile targets of criticism, weighing and responding to received criticisms, resolving misunderstandings, sharpening one's own critical contribution, and so on—all of this is made more laborious by high degrees of difference in the participants' perspectives and backgrounds.

In sum, the reliability benefits expected from cross-perspectival criticism require a type of diverse plurality that is prone to raise costs of *all* types considered in this paper. Thus the reliability benefits yielded by cross-perspectival criticism seem especially costly (if not the costliest) among the various benefits expected from diverse plurality.

5.5. On the Prospect of Cost-Benefit Calculations

Having inspected both the costs and benefits of diverse plurality, it is natural to wonder whether some form of cost-benefit calculation can be conducted. Perhaps we could determine how much, and what types of plurality and diversity we should have in economics by measuring their net benefits (cf. [Gräbner and Strunk 2020](#)). This would not be an easy task, though. There are difficulties of operationalization, commensuration, and measurement in trying to make precise cost-benefit calculations. These derive from the fact that expected benefits are mostly epistemic, indirect, and more uncertain, while the costs we have listed are mostly non-epistemic, more direct, and less uncertain. Nonetheless, it seems obvious that people engaged in doing research and making choices more or less intuitively “feel” the pressures of various costs and that this feel has consequences for their choices.

In general, people in a position to influence the direction in which economics develops inevitably exercise implicit cost-benefit reasoning (see also

Northcott 2018, 1141). Funding agencies (and peer-reviewers, etc.) considering supporting novel and risky lines of inquiry may have in mind the benefits of either comprehensiveness, insurance, stimulation, or reliability. But they in effect also make judgments about the opportunity costs of the funding: how great is the loss of not funding the tried-and-trusted standard approaches? Implicit cost-benefit judgments are involved in petitions in favor of plurality (Hodgson, Mäki, and McCloskey 1992) or against it (e.g., Jean Tirole's petition against funding heterodox economics, reported in Chavance and Labrousse 2018). What is noteworthy is that all such judgments are uncertain and may fail to get the facts right. Understanding the relevant cost and benefit concepts and their links to plurality types does not make these complex matters easily commensurable nor precise, but it may help in making the implicit judgments transparent and subject to critical discussion.

6. Economics-Specific Considerations

So far we have been discussing the costs related to various types of plurality and hence to various benefits of plurality at a fairly general level. In reality, these dynamics and tendencies play out differently in the contexts of various disciplines and research fields at different stages of their development. This suggests yet another reason why understanding the costs of diverse plurality is helpful: the costs may enable us to *explain* the actual degree and types of plurality in any given discipline or field. Our approach is inspired by *transaction cost economics*, which functionalistically explains firms' structures as cost-minimizing arrangements, given the environment and other specifics of the firm (e.g., Williamson 1985). Similarly, we consider what discipline-specific factors there may be and how they affect the costliness of various kinds of plurality, using economics as an example. It turns out that in economics, the costs of diverse plurality seem particularly acute. Perhaps it is no wonder then that economics appears to display a high degree of low-diversity plurality but remarkably little high-diversity plurality.

6.1. Economics-Specific Determinants of Production Costs

Neoclassical modeling is relatively standardized and uniform, more so than many heterodox approaches, and hence it exhibits stronger economies of scale than many alternatives. Thus the present uneven situation in which most research in economics is conducted within the neoclassical tradition is more production-cost efficient than a hypothetical situation in which the diverse alternatives would have more equal weight in the allocation of academic resources. Despite the diversity of approaches actually existing in economics, the institutional system of the discipline directs a vast majority of resources to the standardized mainstream (Chavance and Labrousse 2018; Lee, Pham, and Gu 2013; Corsi, D'ippoliti, and

Lucidi 2010; Wright 2023; Lari 2024)—and thereby, purposefully or not, reduces the intellectual production costs within the discipline.

But this situation is time-sensitive. If more resources were allocated to the non-mainstream approaches, in due time they might (or might not) catch up in terms of their efficiency. In the short run, however, the high production costs of diverse plurality are hard to escape, which of course does not need to be taken as a recommendation against investing in diversification.

6.2. Economics-Specific Determinants of Interaction Costs

In disciplines in which the practitioners have a broad education, interaction costs will be lower. Having basic knowledge of other disciplines—their concepts, methods, subject matters, aims, etc.—makes it easier to communicate with practitioners in those fields. Similarly, understanding at least the basics of other approaches and traditions in one's own discipline facilitates interaction with proponents of those approaches. Understanding of the history of one's own discipline helps to put one's own favorite approach in context and to avoid seeing it as the only reasonable approach when in fact there are several evolving options. Among professional economists having gone through the standard educational programs in economics, however, wide-ranging solid knowledge of approaches significantly diverging from the neoclassical mainstream is rare. This has several reasons such as the technical skills which students need to learn but which crowd out the teaching of history of economic thought and contemporary non-mainstream approaches. Arguably the desire to appear as scientific also plays a role in excluding curriculum contents that would convey the impression that the current approach is in any way contingent—a result of path-dependent historical processes and an option among other alternatives. Be that as it may, the result is that economics graduates are not particularly well-equipped to engage in constructive interaction across boundaries between disciplines or between diverse approaches within their discipline. This is prone to raise the interaction costs of diverse plurality in economics to prohibitive levels.

Economics is overall also more technical than other social sciences and it uses a language that may be inaccessible to outsiders. Such features are apt to steepen the learning curve for potential outsider collaborators, including those aspiring to offer constructive criticism. This further increases the costs of interdisciplinary interaction that involves economists.

6.3. Economics-Specific Determinants of Authority Costs

For a discipline with little authority in the first place, the authority-threatening side-effects of plurality are not that relevant. But economics is the most authoritative and influential of the social sciences (Hirschman and Berman

2014; Maesse et al. 2022), and consequently it has much to lose if the costs are realized. Furthermore, there is reason to believe that the authority of economics is *particularly* brittle in face of the side-effects of plurality. Plurality of rival substitutes, especially of the interactive kind with overt debate for defeat, seems highly authority-costly in economics. Firstly, the policy (and political) relevance of the research in economics makes it more likely that disagreements catch the attention of outsiders. Hardly anyone cares if researchers disagree on issues far removed from practical concerns. But if they disagree on whether society can afford maintaining some specific level of social security benefits, the case is altogether different. Any unpleasant conclusions are likely to be challenged. As Contessa (2022) notes, on policy-relevant economic issues people may assign unproportionally high credibility to experts that present convenient views (“wishful expert shopping”), and actors like think tanks or media organizations may advance their values and interests by representing suitable experts favorably and discrediting others (“assisted expert shopping”). Even a dissenter that represents a tiny minority may be used to erode trust in mainstream researchers. Questioning the authority of mainstream researchers can happen due to genuine worries about inductive risk—acting on the basis of mistaken results. But as cases like climate skepticism show, on politically charged issues various non-scientific actors may easily cling to even minor signs of dissent (even if the dissent is unfounded) in order to undermine the authority of science and to overwhelm scientists with unfruitful criticism and even intimidation (Biddle and Leuschner 2015; Oreskes and Conway 2010).

Secondly, due to its complex and evolving subject matter, economics is also characterized by high empirical uncertainty in the sense that it is difficult for economics to make accurate predictions or to otherwise epistemically and practically control its target phenomena. This makes it easier to question the authority of the discipline and more difficult to defend it, compared to many of the natural sciences. In earlier decades, the central role given to formal theory with its precision and logical certainty vis-à-vis unclear and messy empirical and applied research may have served to protect the scientific image of economics (Whitley 1984 [2000]). But this diagnosis might be outdated today, as the self-understanding of economics, along with its public image, has revitalized the idea that economics is first and foremost an empirical science.

6.4. Explanatory Potential

If the above analysis is even roughly correct, it is no wonder that economics is not a very “pluralistic” discipline, tolerant of diverse approaches. This conclusion stands in contrast to the vast literature (often authored by heterodox economists) that perceives a puzzle or mystery in the stark contrast between the presumed benefits of plurality and the actual uniformity of

economics (e.g., [Lawson 2017](#)). These pronouncements often portray the situation as a striking and exceptional instance of a discipline having ended up in totally bizarre tracks. Explanations (themselves very diverse!) for the dominance of the neoclassical tradition, broadly understood, have ranged from the cultural and psychological ([Nelson 1996](#)) to the political and ideological ([Guerrin 2004](#)). Our analysis suggests that the dynamics at play might just be similar to those working in all of science, only working out in a *quantitatively* peculiar way in economics due to its subject matter, internal institutional structure, and sociopolitical status. Economists' reluctance toward diverse forms of plurality can be explained, at least partly, as a particular and situated response to a general problem: the cost-benefit tradeoff of diverse plurality.

7. Discussion

7.1. Issues for Further Work: Cost Incidence, Time Scales, and the Political Dimension

As we pointed out in the introduction, many questions must be left for further study, but we are optimistic that our framework and this initial analysis will be helpful for articulating the questions clearly. One important question is, who or what acquires the benefits and suffers the costs? The *who* and the *what* on the two sides of the cost-benefit profile do not necessarily coincide. For example, while the benefits of diverse plurality may be enjoyed by the institution of science, or by society more broadly, the costs may be the burden of individual researchers or research communities (see also [Fehr and Jones 2022](#)). Making matters even more complex, the incurrence of costs to some party may benefit others. For example, it is conceivable that under some circumstances high authority costs to economists might strengthen the authority of other disciplines.

Moreover, there is a temporal dimension in the costs and the benefits. For example, insurance benefits emerge as soon as the pluralistic recommendation materializes, while stimulation and reliability benefits only begin to emerge in the course of (possibly time-consuming) interaction among the plural items. Questions of relative time scales, time lags, feedback loops, and the like lie on the agenda for further investigation.

Further research should also connect the ethical and political dimensions of science to the suggestions of this paper: Whose interests count and whose voice is heard when decisions are made about which epistemic risks most need to be insured by diverse plurality? What is regarded as comprehensiveness worth pursuing? When are authority costs to science a problem to the society at large? Answers to these questions affect the types of plurality worth striving for.

7.2. Clarifications

The analysis we have presented is not at all meant to be anything close to the final word on the costs of plurality and diversity. Instead, it is a call for scholars to study the costs as vigorously as they have studied the benefits. We see ourselves as having sketched out a preliminary map of the directions that need to be explored. Further work can and should provide more nuanced analyses of relevant cost types and of their interrelations with various plurality types and context-specific factors.

While we urge for serious consideration of the costs of plurality and diversity, we do not do so to preserve the status quo of economics. While the remarks presented in this paper may come across as disillusioning to proponents of pluralism and diversity, we hope it is a fruitful disillusionment, for it opens up new ways of thinking that may lead to more effective results than mere repetition of the blessings of pluralism. The better we understand what stands in the way of diverse plurality, the better positioned we are in removing the obstacles, whenever we consider it desirable given the respective costs and benefits.

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