

Observations on the historical usage of the term “comparative advantage”

Martin Grančay¹

ABSTRACT:

The authorship of the principle of comparative advantage has been attributed to different economists, most often to David Ricardo, Robert Torrens, James Mill and two anonymous authors. The majority of economic historians agree Ricardo was the first to successfully state the principle in full. It is also generally accepted that the first economist to correctly use the term "comparative advantage" in connection with international trade was Torrens in 1826. However, this is not to say Torrens invented the term. The goal of this research is to show how historical usage of the term "comparative advantage" developed from random mentions of the term in papers from various fields of science in the beginning of the 18th century to a more specific usage in agriculture, and later in international economics. We use quantitative text analysis to find early 18th and 19th century mentions of "comparative advantage" and related terms in a database of more than 100,000 works. We analyze each search result to determine the nature of the term's usage and its relation to the modern definition of the principle of comparative advantage. We conclude that none of the 18th century mentions of the term is compatible with its modern perception.

KEY WORDS: comparative advantage; text analysis; 18th century economics; classical economics

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1 Introduction

It has been more than two centuries since the “the deepest and most beautiful result in all of economics” (Findlay 1987, 514) came into being. The principle of comparative advantage is an unbelievably simple, yet counter-intuitive law with strikingly profound implications on trade theory and policy. In its most basic form it shows that even if a country has absolute advantage in producing all goods, it will still be better off if it participates in international trade and imports some of the goods it produces comparatively less efficiently in exchange for the goods it produces most efficiently. Over years, the principle has been critically reviewed by 10 generations of economists, has undergone numerous extensions and led to creation of new, modern theories, but it still remains one of the key pillars of international economics.

Most often, authorship of the principle of comparative advantage is attributed to David Ricardo. However, several economic historians have been debating the roles of Robert Torrens, James Mill and two anonymous authors in formulation of the principle. While the name of the original author is arguably not the most important issue of today's economics, the debate has some interesting features that are worth looking at. Even more fascinating is the question of who invented the term “comparative advantage”. A typical answer would be David Ricardo. But Ricardo's whole work contains the term only once and even that one occurrence is not related to the principle of

¹ Faculty of International Relations, University of Economics in Bratislava, Dolnozemska cesta 1/B, 85235 Bratislava, Slovakia. E-mail: martin.grancay@euba.sk.
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comparative advantage itself. The first 'correct' use of the term appears to have been made by Robert Torrens in 1826. Nevertheless, "comparative advantage" appeared in different contexts in hundreds of earlier works.

The goal of our research is to analyze changes in usage of the term "comparative advantage" over time. We argue it developed from random mentions in papers from various fields of science in the beginning of the 18th century to a more specific usage in agriculture, and later in international economics. It has been in use at least since 1701, but in most cases its meaning was limited to "advantage when compared to". The term did not assume its modern connotation until the 1820s.

The rest of the paper is structured as follows. Section 2 briefly describes the debate about authorship of the principle of comparative advantage. It shows that diverging views on authorship of the principle are caused by diverse definitions of its satisfactory formulation. Section 3 describes the motivation for the research and identifies the data and methods used. In section 4 main results are presented. In the last section, we provide conclusions and discussion.

2 Authorship of the principle of comparative advantage

Since David Ricardo published his famous example about trade with wine and cloth between England and Portugal in 1817 the principle of comparative advantage has been firmly associated with his name. While as early as 1826, in the 3rd edition of his *Essay on the External Corn Trade*, Robert Torrens claimed his priority in inventing the principle, no economists paid attention to his words. After all, Torrens was known to be "inclined to overstate his own originality and importance" (de Vivo 2010, 101) and consequently he wasn't very popular among his peers. With a single exception of Emanuel Leser in 1881, no-one took Torrens seriously until the beginning of the 20th century.

The academic debate on the authorship of the principle of comparative advantage began in 1911. Eight years before, Edwin Seligman had published a paper where he asserted that "not only the principle itself, but many of its applications, are found in Torrens" (1903, 344), namely in his 1815-work *Essay on the External Corn Trade*. This resulted in a strong opposition from Jacob Hollander (1911, 460) who gave a list of fifteen reasons why Torrens' account of the principle could not be considered satisfactory. Since then, a part of economic historians has been siding with Torrens, while many others remain unconvinced of his merits.

The majority of arguments used in the authorship debate refer to the following section in Torrens' *Essay* (1815, 263-5):

"Let us suppose, that there are, in England, unreclaimed districts, from which corn might be raised at as small an expense of labour and capital, as from the fertile plains of Poland. This being the case, and all other things the same, the person who should cultivate our unreclaimed districts, could afford to sell his produce at as cheap a rate, as the cultivator of Poland; and it seems natural to conclude, that if industry were left to take its most profitable direction, capital would be employed in raising corn at home, rather than in bringing it from Poland at an equal prime cost, and at a much greater expense of carriage. But this conclusion, however obvious and natural it may, at first sight, appear, might, on a closer examination, be found entirely erroneous. If England should have acquired such a degree of skill in manufactures, that, with any given portion of her capital, she could prepare a quantity of cloth, for which the Polish cultivator would give a greater quantity of corn, than she could, with the same portion of capital, raise from her own soil, then, tracts of her territory, though they should be equal, nay, even though they should be superior, to the lands in Poland, will be neglected; and apart of her supply of corn will be imported from that country. For, though the capital employed in cultivating at home, might bring an excess of profit, over the capital

employed in cultivating abroad, yet, under the supposition, the capital which should be employed in manufacturing, would obtain a still greater excess of profit; and this greater excess of profit would determine the direction of our industry.”

For advocates of Torrens' authorship, such as Viner, Robbins, Chipman and to a certain extent also Schumpeter, this wording is satisfactory. They consider it an acceptable, essentially complete formulation of the principle of comparative advantage. As it was published two years earlier than Ricardo's *Principles*, the argument goes, there is no reason to contest Torrens' authorship.

However, some other economists hold a different opinion. One of the most prominent critics of Torrens' role in formulation of the principle of comparative advantage is Roy Ruffin. In two influential papers (2002 and 2005) he set out to show that the example Torrens used in his *Essay* to illustrate gains from trade was incomplete and under certain circumstances even incorrect. His main arguments include the fact that Torrens did not state the key assumption, that factors of production are relatively immobile between countries when compared to goods, he did not spell out a comparison of the real costs of production of manufactures and corn in England and Poland, and most of all, he was a strict defender of the principle of absolute advantage.

While the debate has mainly focused on the roles of Ricardo and Torrens, at least two other economists have been suggested as possible authors of the principle of comparative advantage. William Thweatt (1976) and Murray Rothbard (1996) claimed the principle was originated by James Mill and the most famous section of Ricardo's *Principles* was either written by him or Ricardo wrote it on his behest. Giancarlo de Vivo hypothesized the principle might have been created by the anonymous author of a nearly forgotten pamphlet titled *Considerations on the Importation of Foreign Corn* which was published in 1814 and which Torrens acknowledged he had read and might have borrowed “one or two arguments” from it (de Vivo 2010, 101).

John Pullen directed the attention of economic historians to another anonymous pamphlet called *Letter on the True Principles of Advantageous Exportation* published in 1818, which arguably contains a very complex formulation of the principle and whose author speaks of it “as if what he is saying is common knowledge amongst commodity traders” (Pullen 2006, 62). He comes to the conclusion that the principle of comparative advantage might have been a well-known rule long before Ricardo, Torrens and Mill published their works, and therefore none of them could have originated it.

Finally, Leonard Gomes had a very different opinion. He argued that Torrens, Ricardo and Mill might have reached the principle independently of each other and it could simply be “a case of multiple discovery, evidently fairly common in science” (Gomes 1987, 144). However, this seems highly unlikely. First, their texts were far from being published simultaneously, and second, it is hard to believe that they were not aware of each others' works and did not influence each other. Mill was Ricardo's good friend and mentor, and contemporary correspondence evidences all three of them knew each other.

The short literature review provided above shows that the question of who is the real author of the principle of comparative advantage has no easy answer. As we have shown elsewhere (Grancay and Szikorova, 2013a), the major problem is that there is no consensus on what is a satisfactory formulation of the principle. As a result, some economic historians see Torrens' formulation as satisfactory, while others consider it incomplete.

It can be argued that a simple modern formulation of the principle of comparative advantage rests on seven elements. These are: (1) an assumption that there are two countries and two goods, and one country might be superior in production of both goods, (2) an assumption that factors of production are immobile between countries, (3) comparison of cost or price ratios between countries, (4) a statement that both country A and (5) country B gain from mutual trade, (6) these gains (when measured by simple methods available to classical economists, i.e. efficiency gains) are not

necessarily equal, and (7) a numerical example. The answer to the question of priority in publishing the first definition of the principle of comparative advantage depends on how many and which of these elements are seen as necessary for the definition to be satisfactory (table 1).

Table 1: Seven elements of the modern definition in selected early 19th century works

	Anonymous ¹ 1814	Torrens ² 1815	Ricardo ³ 1817	J. Mill ⁴ 1818	J.S. Mill ⁵ 1848
Superior country	Part.	Part.	Yes	Yes	Yes
Factor immobility	-	-	Yes	-	Yes
Comparison of ratios	Part.	Part.	Yes	Yes	Yes
Benefits for A	Yes	Yes	Yes	Yes	Yes
Benefits for B	Yes	-	Yes	Yes	Yes
Difference in benefits	Yes	-	-	Yes	Yes
Numerical example	Part.	Part.	Yes	Yes	Yes

Notes: Yes – element present, part. – partially present, - – not present.

¹ Considerations on the Importation of Foreign Corn, ² An Essay on the External Corn Trade, ³ On the Principles of Political Economy and Taxation, ⁴ Colony, ⁵ Principles of Political Economy with Some of Their Applications to Social Philosophy.

Source: Own elaboration.

It can be asserted that the first full classical definition of the principle (i.e. one that includes all seven elements) can be found in John Stuart Mill's *Principles of Political Economy* published in 1848. Judgments about the completeness of any earlier definitions are arbitrary and dependent on economic historians' own subjective definitions of the principle.

3 Methodology and data

While the debate on authorship of the principle of comparative advantage is far from over, it is generally accepted that the first economist to correctly use the term "comparative advantage" in connection with international trade was Robert Torrens. He did so in the 3rd edition of the *Essay on the External Corn Trade* published in 1826. In the preface Torrens states that "commodities, the cost of producing which is greater in foreign countries than at home, may, nevertheless, be imported, provided the comparative disadvantage of the foreign capitalist in producing the imported article, be less than the comparative advantage of the domestic capitalist in producing the articles exported in exchange" (Torrens 1826, vii).

This is not to say that Torrens invented the term, let alone that he was the first economist to use it. On the contrary, an earlier use of "comparative advantage" can be found in the original edition of David Ricardo's *Principles of Political Economy and Taxation*. However, connection of his use of the term to its modern meaning is not as obvious as it is in the case of Torrens. Ricardo mentions that "a new tax [...] may destroy the comparative advantage which a country before possessed in the manufacture of a particular commodity" (Ricardo 1817, 363-4) and also that "rise in the price of most of our own commodities [...] could not materially interfere with the foreign trade, and would not place us under any comparative disadvantage as far as regarded competition in the foreign markets" (Ricardo 1817, 220). These quotes can be found in different chapters of Ricardo's book and are not linked to his famous sections on trade with wine and cloth between England and Portugal or mutually advantageous exchange between a shoemaker and a hatter.

As surprising as it might sound, many authors used the term "comparative advantage" in their works even before Torrens and Ricardo. A brief search in any library with access to pre-19th century

documents will show the term occurred several hundred times in books, pamphlets and papers of the era. But does this mean that the principle of comparative advantage was well-known long before Ricardo, Torrens and Mill published their famous works, and the whole debate about the authorship of the principle is on a wrong way? Probably not. In our previous work (Grancay and Szikorova 2013b), we used quantitative text analysis to test the hypothesis that the principle was a well-known rule among commodity traders and found no evidence to support this claim, despite having examined more than 7,000 pages of extracts from trade-related texts. It is an obvious assumption, therefore, given the large number of occurrences of the term “comparative advantage” in pre-Ricardian literature, that the meaning of the term was different from what it is today in international economics.

The goal of our research is to analyze changes in usage of the term “comparative advantage” over time, specifically in the 18th and early 19th centuries. To our best knowledge, little attention has been paid to this issue so far. No papers have been published on the topic and even the highest authority in the field, Andrea Maneschi, devotes only a few lines to it in his celebrated monograph, simply focusing on the question of priority in terminological usage of the phrase and mostly repeating earlier words of Jacob Viner and William Thweatt (Maneschi 1998, 55).

The present research was conducted using three voluminous databases operated by GALE CENGAGE Learning. The databases include more than 240 thousand books and pamphlets, and 71 titles of newspapers published mostly in the 18th and 19th centuries, giving a total of almost 50 million pages of text (table 2). The coverage of “The Making of the Modern World” focuses specifically on trade and economics, whereas the other two databases include also sources from the fields of history, literature, religion, law, fine arts, science and many others.

In line with the goals of our research, we used the advanced full-text search tool of the databases to find the terms “comparative advantage”, “comparative advantages”, “comparative cost” and “comparative costs” in the works issued before 1826, i.e. before the 3rd edition of Torrens’ *Essay on the External Corn Trade* was published.

Table 2: Databases used

Name	Period covered	No. of titles	No. of pages
Eighteenth Century Collections Online	1701-1800	182,898	32 million
The Making of the Modern World	1450-1850	61,000	12 million
British Newspapers 1600-1950	1600-1950	71	3 million

Source: www.gale.cengage.com.

Each search result was carefully analyzed to verify whether at least one of the terms of interest was present and to determine whether it was related to the principle of comparative advantage. If it was not, contextual meaning of the term was ascertained from the text. Usually, this required reading the sentence highlighted by the search engine and one or two preceding paragraphs. The whole analysis was conducted by the same person to ensure consistency. To minimize fatigue-related errors we limited the daily text analysis time to four hours.

4 Results

Out of the four terms searched for, the one that appeared most frequently in our databases was “comparative advantages” with 764 occurrences, followed by “comparative advantage” with over three hundred of them. “Comparative costs” appeared only 7 times and was by far the least commonly used term (table 3). The order of frequency is not very surprising, given that the variability of contextual meanings of “comparative advantages” is much higher than the variability of meanings of “comparative cost” or “comparative costs”. The term “comparative advantages” can be used in any

field of science to indicate that something has advantages in comparison to something else no matter what the nature of those advantages is. Conversely, it is difficult to find a use for the terms “comparative cost” and “comparative costs” that would not be connected to economics or business hence their frequency of occurrence must be lower. One can easily test this claim using Google and searching for the four terms on the world-wide web. On August 3rd 2013, internet included the term “comparative advantage” approximately 1,540 thousand times and “comparative advantages” 747 thousand times. The sum of search results for “comparative cost” and “comparative costs” was less than 500 thousand.

Table 3: Frequency of occurrence of comparative advantage-related terms before 1826

Database	“comparative advantage”	“comparative advantages”	“comparative cost”	“comparative costs”
18 th Century Collections Online	123	295	3	0
The Making of the Modern World	110	307	24	6
British Newspapers 1600-1950	76	162	9	1
TOTAL	309	764	36	7

Source: Own elaboration.

The coverage of the “Eighteenth Century Collections Online” and “The Making of the Modern World” databases overlaps, therefore some search results appeared in both of them. Moreover, even within the same database many duplicates or near-duplicates were identified. Typical examples of this would be different copies of the same book, different editions of the same book, or a work published both as a separate pamphlet and a part of a book. The frequency of duplicates oscillated between 40 and 50 per cent.

The first use of one of the comparative advantage-related terms was identified in a book titled *An essay towards the theory of the ideal or intelligible world* by John Norris published in 1701.² The author offers a philosophical account “of the comparative certainty of faith and reason” and in comparing “intelligible and natural worlds” in one of the paragraphs he reaches the conclusion that “it may be [...] consider’d as another comparative advantage on the side of the intelligible world, that the abstracter objects are most knowable, as being more universal and more necessary, and the abstracter reasonings are most certain, evident and conclusive” (p. 192). Obviously, the contextual meaning of the term “comparative advantage” in the passage above is “advantage when compared to” and it has no link to the principle of comparative advantage as we know it from international trade theory.

The first economics-related use of the term appears to be the one found in anonymous author’s *Thoughts on the discontents of the people last year, respecting the sugar duties* published in 1731, where the author criticizes a claim by an Irish refiner that the refiners enjoy no benefits from duties on inferior sugar and molasses, and in doing so uses a phrase “comparative advantage on the inferior sugar and the molasses” (p. 60). While it is unclear what he means by the statement, surrounding paragraphs show no trace of the principle of comparative advantage and focus purely on discussing the duties on sugar.

It should be noted that the first books to use the term “comparative advantage” or “comparative advantages” were from various fields of science, including literature, history, philosophy, medicine, law or religion. As can be seen in table 4, the context was nearly always the same – to indicate that one thing, be it a type of medical treatment, revolution or solitary imprisonment of convicts, has advantages in comparison to another thing.

² No earlier use was found in the three databases, Google Books or Google Scholar applications.

Table 4: Examples of 18th century usage of term “comparative advantage” in various fields of science

Field	Author, year, title and a short example
Literature	Boyd, H. 1798. <i>The Indian observer</i> . “The poet, in his continued work, has the varied advantage of what the great critic describes in his rule for an epic poem, ‘a beginning, a middle, and an end.’ [...] Such being the <u>comparative advantage</u> of the poet, the question is, whether the respective superiority of the painter, in general and instant effect, be sufficient to counterbalance it, and to give him on the whole equal sway over the mind.” (p. 79)
History	Anderson, W. 1769. <i>The history of France, during the reigns of Francis II. and Charles IX.</i> “In the full conviction of the <u>comparative advantage</u> of this spirited revolution, the protestant chiefs drew out their troops from their three posts, chose their ground, and ordered the battalia with all the composure and intrepidity of men, who prepared to engage in the most equal combat.” (p. 149)
Religion	[Unknown.] 1789. <i>Forms of prayer, for the use of a congregation of Protestant Dissenters, in Manchester.</i> “Upon the <u>comparative advantage</u> of forms in which the congregation take [sic] an audible part, of those which the minister alone recites, and of extempore prayer, it is not so easy to decide as some persons imagine.” (p. 7)
Philosophy	Ferguson, A. 1792. <i>Principles of moral and political science.</i> “Among the errors to which man is exposed, in his first attempts to form a notion of good and evil, one is peculiarly dangerous to the peace of society, and apt to empoison the mind with vice; namely, the mistake of precedence, or <u>comparative advantage</u> , whether in respect to rank, power, or wealth, for excellence.” (p. 182)
Medicine	Duncan, A. 1790. <i>Heads of lectures on the theory and practice of medicine.</i> “[On the] <u>comparative advantage</u> of mild and severe treatment – observations respecting the use of music in cases of melancholia.” (p. 180)
Law	Hanway, J. 1778. <i>Distributive justice and mercy.</i> “Computation of the cost of the convicts working on the Thames; and the <u>comparative advantage</u> of the pecuniary saving by solitary imprisonment.” (p. 117)

Source: Own elaboration.

In the second half of the 18 century, the term “comparative advantage” began appearing regularly in pamphlets and books dealing with agriculture. Specifically, it was commonly used in two debates – a debate on advantages of using oxen instead of horses in husbandry and a debate on advantages of drill and broadcast methods in the cultivation of different crops. A typical use and meaning of the term can be seen from the following two extracts:

“The comparative advantage of oxen is great where they are bred by the farmer who uses them, and fed on commons in summer, and on straw in winter, till three years old, (but not so much where they are bred in inclosed [sic] lands, or bought at four years old) and worked till six or seven; they are less liable to sickness than horses; and if accidents befall [sic] them, they are of some value. Two oxen will do more work than one horse of equal value with them, nearly in proportion as six to four, and they cost less in keep.” (Bath and West of England Society. 1780. *Letters and papers on agriculture, planting, &c.*, p. 163)

“Few objects seem of so much importance to agriculture, as the ascertaining the comparative advantage, of the drill and broad-cast method, in the culture of wheat, barley, oats, beans, &c. and in the Vth. vol. of these Transactions, an account is given of a large quantity of land having been sown in drills, by Mr. John Boote, of Atherstone upon Stour.” (Society for the Encouragement of Arts, Manufactures, and Commerce. 1783. *Transactions of the Society, Instituted at London for the Encouragement of Arts, Manufactures and Commerce*, p. 73)

It is once again obvious that none of the uses of the term “comparative advantage” has a connection to the principle of comparative advantage. In fact, our text analysis did not find a single pre-1826 use of the term that would correspond to the definition of the principle. The same is valid for the terms

“comparative advantages”, “comparative cost” and “comparative costs”. Only in two post-1817 cases did we find indications that authors could have been aware of the principle and might have used the term correctly; however, their texts provide no compelling evidence that this was the case. Both are connected with the name of John R. McCulloch.

The first case can be found in J.R. McCulloch’s article on Ricardo’s economical and secure currency published in *The Edinburgh Review* in 1818:

“It is not the ratio between the supply and demand for such money [money consisting of gold and silver or of any other commodity whose cost of production is considerable], which can operate any permanent effect on its value; but it is the comparative cost of its production, or, as Mr. Ricardo has demonstrated, the comparative qualities of labour necessary to bring it to the market. If a guinea ordinarily exchanges for a couple of bushels of wheat, or a hat, it is because the same labour has been expended on its production as on that of either of these commodities.”

The other text is a short article from *The Morning Chronicle* published on April 23, 1824. The author comments on a lecture by J.R. McCulloch that had taken place a day before:

“He [McCulloch] set out with stating, that those employments which yield the greatest profit, were not only the most advantageous to individuals but to the country, and shower the error of Dr. Smith, Mr. Malthus, and most Political Economists, in supposing that capital employed in agriculture will yield a greater produce and afford employment to a greater number of workmen than if employed in manufactures or commerce, and consequently will be more advantageous to the public. There is no test for determining of the comparative advantage of the employment of capital, but the average rate of profit.”

Both texts appear to be more related to the law of absolute advantage than to the principle of comparative advantage. Clearly, further paragraphs could develop the ideas further and bring them close to the principle of comparative advantage. However, the first text is based on David Ricardo’s 1816 work *Proposals for an Economical and Secure Currency* which has no relation to the principle; the second text continues with a paragraph from which it is obvious that it does not deal with the principle. Moreover, McCulloch was known to be a proponent of Smith’s trade theory – it would have been ironical if he had achieved priority in using the term “comparative advantage”.

The analysis of more than 1,100 search results from the period of 1701-1826 did not find any occurrence of the term “comparative advantage” / “comparative advantages” / “comparative cost” / “comparative costs” that would be consistent with the principle of comparative advantage. Hence it seems it was Robert Torrens in 1826 who coined the term. The research also showed that the usage of the term developed from random mentions in papers from various fields of science in the beginning of the 18th century to a more specific usage in agriculture, and later in international economics. It has been in use at least since 1701, but in most cases its meaning was limited to “advantage when compared to”.

5 Conclusions

In his famous monograph, Andrea Maneschi (1998, 56) agreed with Jacob Viner in that the quest for the original author of the principle of comparative advantage was a futile and unimportant activity. Viner had once stated that “terminological usage by the classical economists must have been so influenced by their oral discussion as to make the record of priority in print have little bearing on the question of priority in use” (Viner 1937, 443) and it appears that he was right. Ricardo, Torrens, Mill and many other contemporary economists probably knew each other and it is only hard to believe that they wouldn’t have been aware of each others’ work. It is therefore difficult, if not impossible, to offer a

definite answer to the questions of who invented the principle or who gave it the name under which it is known today. However, a thorough analysis of old literature, which does not aim to address those questions, can show some interesting facts about how economic ideas and economic terminology developed over time. This was the aim of the presented research.

We have shown that historical usage of the term "comparative advantage" developed from random mentions of the term in papers from various fields of science in the beginning of the 18th century to a more specific usage in agriculture, and later in international economics. The term had been in use long before Ricardo and his peers formulated the principle of comparative advantage, but the meaning was different – it was simply meant to indicate that something has advantages in comparison to something else no matter what the nature of those advantages is. The key element of the principle, comparison of ratios, was not involved. This is hardly surprising. Outside of economics, the term has been used in this way until today, as can be easily verified by searching the term on the internet and excluding all economics-related results.

The results of our research have a three-fold importance. First, they contribute to the debate on authorship of the principle of comparative advantage, showing that before the 1820s, the term "comparative advantage" was used in a context more similar to the principle of absolute advantage than to its modern use. Second, the text analysis performed confirms that no-one correctly used the term "comparative advantage" in the modern context in connection with international trade earlier than Torrens in 1826. Finally, the methodology can be used to analyze further questions of terminological priority in economics.

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