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Opportunity Cost Theory in the Late 19th and Early 20th Centuries: Argument and Development Leading to the Chicago and LSE Schools

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ABSTRACT

The purpose of this study is to examine the early development of opportunity cost in the English-speaking world during the late 19th and early 20th centuries and draw a pre-history of opportunity cost theory in the Chicago and LSE schools. In previous studies, the opportunity cost concept was regarded as a subjective cost derived from Austrian schools. However, the opportunity cost concept did not develop directly from the subjectivist theories of the Austrian school but rather underwent a unique transition in the English-speaking world. Therefore, until the early 20th century, the opportunity cost debate did not place as much importance on Buchanan's two types of subjectivism and objectivism as it does today. Davenport and Wicksteed considered opportunity cost from both subjectivist and objectivist perspectives and examined cost not only from the demand side but also from the supply side. It provides a new perspective that the pre-history of opportunity cost of the Chicago and LSE schools should be understood by the dichotomy, which is not the division between subjectivism and objectivism but demand and supply, or individuals and society.

JEL classification: B12, B13, D46

Keywords: opportunity cost, history of modern economics, the LSE, the Chicago school, H. J. Davenport, P. H. Wicksteed, J. M. Buchanan

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* In alphabetical order

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1 Introduction

The purpose of this study is to examine the early development of opportunity cost in the English-speaking world in the late 19th and early 20th centuries and draw a pre-history of opportunity cost theory to the Chicago and the LSE schools.

The opportunity cost is derived from the Austrian school and is introduced into both Chicago and the LSE. J. M. Buchanan's *Cost and Choice* ([1969]1999) reviewed the development, until the middle of the 20th century, of opportunity cost in the English-speaking world from this viewpoint, pointing out two types of cost concepts: (1) a quantitative cost view based on objectivism, which has continued from classical economics, and (2) a subjective cost view based on choice theory. He believed the former view of costs succeeded to the Chicago school's "neoclassical paradigm," and the latter as a subjective theory of value that has its origins in the Austrian school. According to Buchanan, two types of opportunity cost were identified in Chicago by F. H. Knight ([1934a]1965, 1935), who discovered the idea of subjective cost used by P. H. Wicksteed through L. Robbins.

Recently, Boettke and Rosolino (2020) extended Buchanan's argument by pointing out that the opportunity cost concept developed in the exchange relationship between the LSE and the Chicago schools in the mid-20th century was connected to Buchanan's Virginia school. Boettke and Rosolino (2020) demonstrate the Wicksted-Knight-Buchanan line to introduce the idea of opportunity cost to Chicago, depicting the later as joining that of R. H. Coase of the LSE to Chicago. It also suggests that Wicksteed, representing the view of cost as a subjectivist theory of choice, is behind the opportunity cost concept of the Virginia school today.

The premise of these studies is that the opportunity cost concept is subjective and homogeneous among Austrian school. However, interpretations of opportunity cost in the English-speaking world in the late 19th and early 20th centuries varied, and Buchanan's two categories were not always clear to economists of the time.[1]

This paper describes various evaluations of the initial opportunity cost in the English-speaking world. It argues that its development is, in contrast to the Austrian school, not so much subjective or objective, but rather compatible with these, and, in part, close to the classical school where opportunity cost affects supply in price determination. This context was generated inside the discussion of opportunity cost since the 1890s, when opportunity cost theory was first debated.

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[1] This is also true of the early Austrian School. Subjectivism and objectivism were theoretically not clear in the early Austrian school, and they were first clearly separated by Robbins and the late Austrian school, including v. L. v. Mises and F. v. Hayek (to see understanding of Buchanan's conception, see Buchanan [1969]1999, p. 12, 26). However, the early Austrians' cost concept was still subjectivism, and they kept distance from the classical school; though this paper shows that there was different context to the Austrians in the English-speaking world when opportunity cost was discussed.

This differs from Buchanan’s previous description. He regarded Davenport and Wicksteed as the earliest contributors to the development of subjective cost and classified both Davenport and Wicksteed into his (2) category. However, this study shows that Davenport and Wicksteed’s opportunity cost is not classified in Buchanan’s (2) category.

The remainder of this paper is organized as follows. Section 2 introduces Austrian opportunity cost and various evaluations at the beginning of the opportunity cost concept. Section 3 evaluates economists’ perspective on harmonizing classical and Austrian schools in discussing opportunity cost. Section 4 introduces Wicksteed’s opportunity cost concept from 1910 and his review of Davenport. Finally, we provide a summary in section 5.

2 Various Evaluations of Opportunity Cost in the U. S. in the 1890s

The introduction of opportunity cost in the English-speaking world began with the Austrian school cost theory. This existed in von Wieser's *Natural Value* of 1888 and Böhm-Bawerk's *The Positive Theory of Capital* of 1889. These works were first published in German; naturally, there was no literature available in English immediately after their publication. Their works were translated into English in 1890 (*Capital and Interest*), in 1891 (*The Positive Theory of Capital*), and 1893 (*Natural Value*). Boner first introduced the Austrian school in 1889 in *The Quarterly Journal of Economics*; after that, the Austrian ideas became known in the English-speaking world.

After Boner, American economist S. M. Macvane at Harvard University published an article in the *Quarterly Journal of Economics* in 1890. In this paper, Macvane examined the Austrian school theory from a classical perspective. He questioned the Austrian school's assertion that marginal utility functions as a regulator of exchange values. Macvane's paper was followed by a reply from Wieser in *The Annals of the American Academy of Political and Social Science* and Macvane responded with a rebuttal in *The Quarterly Journal of Economics* in 1893.

This sequence of events led to a discussion of the concept of cost based on subjectivism in the United States. In his 1893 reply to Wieser, Macvane attacked the Austrian school’s cost theory. In 1893, S. N. Patten at the University of Pennsylvania published an article titled “Cost and Expense” in *The Annuals of the American Academy of Political and Social Science*. In 1894, D. I. Green of Johns Hopkins University published “Pain-Cost and Opportunity-Cost” in *The Quarterly Journal of Economics.* The same year, Davenport of the University of South Dakota published “Formula of sacrifice” in *The Journal of Political Economy*.

Although triggered by the Austrian school, these studies on subjectivist costs are not based on a unified view. Macvane and Green (1894) clearly considered the Austrian school, while Patten (1893) and Davenport (1894) did not. Macvane and Green also differed in their evaluations of the classical and Austrian schools, which they used in their side-by-side discussions of the cost theory of the classical and Austrian schools.

This “disagreement” occurred not because the opportunity cost theory of the “newcomer” Austrian school was not yet well understood, but rather because of a different understanding and evaluation of the classical school's view of cost that already existed as a basis for discussion. When discussing opportunity cost, the anchor for American economists was the cost view of classical economics. They interpreted the classical cost view to evaluate “the new” concept of opportunity cost, and discussed it based on their interpretations. Consequently, the debate over opportunity cost in the United States has been contentious.

Macvane (1893), who introduced a series of discussions on opportunity cost in America, positioned the classical school's view of cost as an objective. He stated:

> We have concerned ourselves only with the question, what determines the quantity of other products each man can obtain in exchange for his own? This has been for us the problem of value, and in the solution of it we have rested on the principle of cost. Viewing each man's production of one thing as a means whereby to obtain the many things, and assuming the necessary freedom and intelligence on the part of producers, we have argued that the action of intelligent self-interest must ordinarily keep the terms of exchange in rough accordance with the rule of equal cost for equal cost; that our brick-maker may ordinarily hope to get for his day's product in bricks a general assortment of other things that have cost, in the lump, about the same outlay of labor and waiting. That thesis seems to us to be in accordance with justice, to be a reasonable conclusion from undoubted premises, and finally to be substantially borne out by daily observation in practical life. (Macvane 1893, p. 275)

Macvane believed that the nature of cost should be understood as labor and waiting time, which can be objectively measured as quantities. This orthodox view of cost is associated with Macvane's criticism of the Austrian school of thought. From this perspective, it would be natural for him to object that Wieser’s opportunity cost model does not discuss costs in the first place.

In defining the term cost, Patten (1893) developed a view similar to Macvane’s.

> Cost is measured by the disagreeable exertion necessary for production. It is the sum of all those painful acts which reduce the vitality of the producer, and hence demand certain compensation or relaxation to replace the producer in the condition he was before the act of production. (Patten 1893, p. 703)

Patten also places his own concept of cost in common with that of the classical school, in which cost is measured by labor. This perspective is similar to that of Macvane (1893).

However, unlike Macvane (1893), Patten himself does not go on for the discussion to criticize the Austrian school's view of cost, but rather develops his own theory. Patten seems to believe that this classical view of cost as labor is inadequate in an advanced capitalist society.

> In an advance society, however, an act of production demands of the producer more than mere painful exertion. It also demand sacrifice. Sacrifices differ from costs in that the former relate to acts of consumption while the latter relate to acts of production. Efficient production involves not only cost, but also changes, delays or losses in consumption, which together make up the sacrifices of production. (Patten 1983, p. 703)

Patten emphasizes that the idea of sacrifice (in his words, "expense") is an important factor in production. It is a feature in advanced societies that differs from primitive societies.

Although this appears to be common with the idea of Austrian cost, in this study, Patten himself did not connect his viewpoint to the Austrian school's subjective view of cost. Patten explores new perspectives not previously discussed by the classics, for example, the choice of time allocation between leisure and labor (Patten 1893. p. 703). Furthermore, his argument differs from the classical school, even though he places the definition of cost in the classical school. For instance, Smith says that in pre-capitalist societies, prices are determined by the labor invested, while in capitalist societies, owing to the development of economic stages, profit and land rent, in addition to labor, make up the price. Unlike Smith, the changes, delays, and losses in consumption that Patten refers to here are not caused by the development of economic stages but rather by the allocation of time at the same economic stage. Patten's argument that both "cost and sacrifice" are important to production offers us another unique perspective, different from both the Austrian school of opportunity cost theory and the classical school. Thus, Macvane and Patten, although they had different arguments, shared a commonality in that they both adopted the idea of cost, which is objectively measured as in the classical school.

However, Green denied this view of classical cost theory and took a subjective interpretation when discussing the classical cost view. In response to the 1893 Macvane and Patten papers, and rejected the classical theory of value. He stated:

> Not only does Professor Macvane seem to be in error when he considers "the cost that comes home to the producers in the form of tired muscles and tedious waiting" as the criterion of exchange value, but he also appears to me wrong in at- tributing such a doctrine to the classical theory of value. (Green 1894, p. 220)

Green then points out that the classical view of cost has a subjective as well as an objective aspect; he insisted that A. Smith referred to the subjective cost incurred by the worker in giving up "his ease, his liberty, his happiness"(Green 1894, p. 220, see also Smith [1776]1976, p. 50).[2] Green further points out, with reference to Smith, D. Ricardo, and J. S. Mill, that the labor described by the classics implies not only labor as suffering but also efficacy (Green 1894, p. 221, see also Ricardo [1911]1960, pp. 11-12; J. S. Mill [1948]1915, pp. 458-459). Green goes on to insist that it is so practically difficult to find an accurate measure of the efficacy and suffering of labor that it is naturally assigned for both efficacy and suffering. Based on these classical interpretations, Green believes that the idea of opportunity cost, as a cost concept with an aspect of subjectivity, is an appropriate understanding of the cost of production in the broadest sense.

> …when we once recognize the sacrifice of opportunity as an element in the cost of production, we find that the principle has a very wide application. Not only time and strength, but commodities, capital, and many of the free gifts of nature, such as mineral deposits and the use of fruitful land, must be economized if we are to act reasonably. Before devoting any one of these resources to a particular use, we must consider the other uses from which it will be withheld by our action; and the most advantageous opportunity which we deliberately forego constitutes a sacrifice for which we must expect at least an equivalent return. The sacrifice of waiting, which some writers take so much trouble to establish as a justification of interest, is almost entirely of this kind. (Green 1894, p. 224)

Thus, Green's understanding of classical cost theory in its broadest sense attempts to encompass the classical view of cost with the concept of opportunity cost. In the above discussion, we can observe considerable differences in our understanding of the classical view of cost.

3 The "Objective and Subjective" Classics and Views Compatible with the Austrian School regarding Opportunity Cost

In the context of 1890s opportunity cost theory, the classical cost view was interpreted in a wide variety of ways, ranging from subjectivism to objectivism. Despite the different evaluations of the cost

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[2] There is a note by editors for these words in the Glasgow edition of Smith's Wealth of Nations, which cited statements from Hutcheson and Hume. Hume noted characteristics of labor and disutility, and he also mentioned that labor frequently brings "enjoyment," as follows: "In 'Of Refinement in the Arts', however, he made an additional point in stating that men frequently 'enjoy, as their reward, the occupation itself, as well as those pleasures which are the fruit of their labour'" (Smith [1776]1976, p. 50; Hume [1752]1777, RA3, Mil 269-70).

view between opportunity and classical costs, there was a compatible view of the relationship between them. Green believed that a subjective interpretation of the classical cost view could be reconciled with the opportunity cost concept; Patten believed that by adding his own concept of sacrifice to the classical cost view, he could discuss production costs that could not be grasped by classical production costs alone. Even Macvane, who criticized the Austrian school's subjectivist view of costs, believed that the Austrian school's view and the classical view of costs were complementary and not completely opposed.

Macvane states that marginal utility does not determine value but affects costs by setting quantitative limits on demand.

> It goes to supplement and enrich economic theory at the point of the relations between demand and production. It gives us, in the first place, a new and more fruitful conception of the limitation imposed on production from the side of demand, the conception of a marginal utility for commodities in the mass, at the point at which all producers decide that rest is preferable to additional commodities of any sort. (Macvane 1893, pp. 281-282)

Marginal utility affects costs by adjusting demand. The cost, so adjusted, determines the value of a commodity. Macvane even states that he thinks it is impossible "to see anything in the principle of marginal utility that is not entirely in harmony with the old doctrine of cost as the regulator of value." Although interpreted and evaluated differently by different theorists, opportunity and classical costs were thought to be compatible, rather than in a counterplan relationship in which one was chosen and the other was excluded.

Davenport partly shared the view that opportunity cost and classical cost theory are compatible in price determination.[3] While sharing much in common with the Austrian school in his 1894 paper, Davenport did not completely reject the classical school's emphasis on supply factors, or the concept of production costs in price determination. He believed that "the sacrifice formula allows, if not enforces, a recounting of the theory of the cost of production," and he proposed recounting the cost of production in terms of sacrifice, stating that "from the individual point of view, the formula for the cost of production is not exhaustive" (Davenport 1894, p. 568).

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[3] Davenport's opportunity cost theory has generally been discussed in the context of the Austrian School. Therefore, this perspective may seem opposing. Davenport probably read the Austrian School theory before writing his first paper (Gunning 1998, p. 105). He also probably wrote his first paper without having read Green's paper. However, as discussed here, he incorporated debates in the development of the English-speaking opportunity cost theories.

In his 1902 paper, Davenport reflected on discussions that developed in the 1890s. Davenport (1902) included an acknowledgment of Green, explaining how he came to read Green (1894) during the editing stage of his paper:

> By the kindness of the editor my attention has been called to an article by David I. Green–"Pain Cost and Opportunity Cost"–in the January, 1894, number of this Journal. In many respects Mr. Green's analysis of "opportunity cost" anticipates the positions taken in the last two or three pages of this article, and, needless to say, covers the ground much more adequately. His treatment is especially illuminating for the purposes of this discussion. (Davenport 1902, p. 384)

Because Green (1894) mentioned Patten and Macvane's paper, Davenport probably read it before completing his 1902 paper. This is discussed in the final section. Davenport discussed how the cost of production affects market value dynamically and demonstrated the two factors that Patten explained in his 1894 paper on how costs change prices by changing the quantity supplied.

> Diminishing costs are the characteristics of a progressive social economy: the proximate causes of modifications in value are, then, to be found in those changes of productive processes which, by diminishing the cost, expand supply. A better process implies simply that per unit of product it is now necessary to divert a smaller total of productive forces from other lines of production. …It remains to discuss those limitations of supply due, not to choice between different productive occupations, but to choice of leisure or inaction as against any sort of production…. (Davenport 1902, pp. 380–381)

These examples were paraphrased in Patten's (1894) arguments. Davenport concluded the following.

> The acceptance of sacrifice as at the heart of value concept does not rest upon the cost of production explanation of value, still less upon the labor-cost theory. It does, however, include these wherever they rightly apply, –as, for example, in the case where the producer hesitates between production and leisure. (Davenport 1902, p. 383)

This supply-side factor would lead to Davenport's 1911 paper, "Cost and its significance," and his emphasis on the role of entrepreneurs in cost theory in chapter 13 of *The Economic Enterprise* (1913).

Later, Davenport argued that both classical and opportunity cost influence price determination, stating the following about price determination in *The Economic Enterprise* (1913).

> Is price more dependent upon utility than upon cost–upon demand forces than upon supply forces–upon marginal utility than upon marginal cost; or is it equally dependent upon both? It may be truly said that the dependence is equally upon both, that price is the equating point between the two sides of the price equation…In the main, then, the primacy is with the demand side, although this is not to deny the importance–the secondary importance–of supply. (Davenport 1913, p. 71)

Thus, Davenport believed in subjectivist costs and maintained the cost of production as an objective quantity that played an important role in price determination. His approach is proportional to the classical school's view that supply affects price, while supporting subjectivist opportunity cost.

4 Subjectivism and Objectivism in Wicksteed's Opportunity Cost Theory

The debate has occurred in the United States since the 1890s, although it has sometimes taken place to discover opportunity cost. Until 1910, Wicksteed lightened and insisted on the importance of subjective cost in his main book, *The Common Sense of Political Economy* (Wicksteed [1910]1933; hereafter, *The Common Sense*). Wicksteed probably knew the Austrian school's opportunity cost theory before 1910 because he included the name Böhm-Bawerk in a list of his lectures in 1892.[4] Wicksteed was also influenced by Jevons. Thus, the development of opportunity cost theory in the U. K. was more Austrian than in the American context, as discussed in relation to the classical school. Thus, Buchanan ([1969]1999) points to Wicksteed as the origin of the subjective opportunity cost theory that succeeded Robbins and the LSE school.

However, unlike Robbins(1928), Wicksteed was not a radical subjectivist.[5] In the following section, we discuss Wicksteed's views on costs regarding demand and supply and subjectivism and objectivism.

Wicksteed expressed opportunity cost as "cost of production," which is confusing to the classical denotation. In *The Common Sense*, cost of production means "another name for the marginal significance of certain other things, which have been forgone for its sake" (Wicksteed [1910]1933, p. 380). This expression seems close to today's concept of opportunity cost, such as calling the marginal utility given up for a choice an opportunity cost. However, Wicksteed includes a discussion of the production costs faced by producers as well as the choices made by consumers.

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[4] This is confirmed by the contents of Wicksteed's lecture syllabus Wicksteed ([1910]1933, p. 841). Although he was not a faculty member at any particular university, he did give several lectures in the University Extension system.

[5] Robbins (1928) organizes the development of opportunity cost from a subjectivist viewpoint and criticizes the objective view of opportunity cost discussed in Knight (1928). In this article, Robbins approximates his subjectivist viewpoint to Wicksteed.

Wicksteed provides the following example: If a chair producer realizes that it is more profitable to produce tables than chairs, he diverts the common factor of production wood to the production of tables instead of chairs. At this point, chair production decreases and table production increases, and this change continues until table prices fall. The rise in chair prices is balanced by the energy and resources required for production. We hereby confirm Wicksteed's concept of opportunity cost that the costs incurred in the production process are the value of alternative products (Wicksteed [1910]1933, pp. 378-380).

How are production costs determined? In the above example, the value of the chair is determined by the choices available to the producer; for instance, the relative importance of the other products that a producer can produce in place of the chair. Wicksteed presupposed that this producer's choice is in a realistically feasible production situation, and the possibilities of what can practically be produced instead of a chair are narrowed as the choice becomes more specialized or closer to concrete results. Furthermore, the predictions and scales of producers comparing options are relevant. Each time a decision is made regarding which path to take, certain possibilities become narrower, limiting the range of options that can be made in place of a chair. The costs incurred in making a certain product at any stage are then determined by the value of the other choices and their marginal significance as the other production possibilities are abandoned. As he stated, "We shall have to abandon the favourite diagrammatic method by which prices, whether market or normal, are indicated by the intersection of a curve of demand and a curve of supply, or a curve of demand and a curve of cost of production," (Wicksteed [1910]1933, p. 8). The costs of production incurred are related to the valuation of the producer's choice on the demand side, not only on the supply side.

Thus, Wicksteed rejected the classical view of cost, unlike in the U.S., where continuity with the classical school was emphasized. However, he left a margin for the supply to participate in the price determination. Wicksteed noted that while cost as an actual expense does not determine price, it may determine the lower limit of the price. He stated:

> So the "cost of production" of any one thing is only another name for the marginal significance of certain other things, which have been forgone for its sake. The marginal significance of things that can no longer be produced instead of it has no effect on its present price; the marginal significance of things that can still be produced instead of it will determine the lower limit of the price at which it will be made to order, and the extent to which manufacturers will continue to make it at all. (Wicksteed [1910]1933, p. 380.)

Also,

> …in every case in which the cost of production has not yet been incurred, the manufacturer makes an estimate of the alternatives still open to him before determining whether, and in what quantities,

> the commodity shall be produced; and the stream of supply thus determined on fixes the marginal value and the price. The only sense, then, in which cost of production can affect the value of one thing is the sense in which it is itself the value of another thing. Thus what has been variously termed utility, ophelemity, or desiredness, is the sole and ultimate determinant of all exchange values. (Wicksteed [1910]1933, p. 391)

What is the distinction between the subjective and objective? Wicksteed did not make a strict distinction between the subjective and the objective. In *The Common Sense*, he believed that the cost of production is "the estimated value, measured in gold, of all the alternatives that have been sacrificed" (Wicksteed [1910]1933, p. 385). The point of this statement was that he believed that the cost of production could be measured using gold. Why can subjective values be measured by using objective quantities? According to Wicksteed, there are two types of preference scales: "the individual scale," which is based on subjective values, and "the collective scale,"[6] which is based on objective quantities and values. The individual scale is subjective and includes all aspects of economic decision-making. In contrast, the collective scale can be objective, that is, "made up of individuals." (Wicksteed [1910]1933, p. 393) As an exchange society progresses, the collective scale emerges. He states:

> We may call the whole scale of the individual, on which are entered all things that he estimates and considers in making his selections and determinations, the vital scale or the psychological scale; and the collective scale on which only those things which enter into the circle of exchange are registered, the objective scale. (Wicksteed [1910] 1933, p. 147)

As Wicksteed insisted, gold can be used as a common measure of value and as an objective measure of costs in the community. From this point of view, Wicksteed developed an opportunity cost that is not only subjective but also an objective social existence.[7]

Interestingly, Wicksteed appears to have viewed his own opportunity cost theory as being compatible with Davenport's cost theory. Wicksteed (1914) found similarities between Davenport's arguments on the relationship between production costs and demand and his own perspective. He stated:

> Professor Davenport is to be congratulated on the precision and effectiveness with which he has demonstrated the ruling fact that the usual cross curves of supply and demand, with their point of

[6] Wicksteed also describes it as communal scale (Wicksteed [1910]1933, p. 144).

[7] Wicksteed did not consider that the collective scale, which is the aggregate of the individual scales, would always emerges. The reason is that not all individual choices are exchangeable, whereas the collective scale emerges inside "the circle of exchange," meaning exchange in the marketplace.

intersection determining the price, rest on a superficial and misleading analysis.…A precisely analogous line of investigation stubs out the very roots of the "cost of production" theory of value by showing that the "cost" of any factor of production is simply its estimated significance in other branches of production, so that (like the reserve prices of the holders of a commodity) it should be incorporated bodily in the demand curve. (Wicksteed 1914, pp. 823-824)

Wicksteed sought to incorporate the cost of production into the demand side of the choice process. In the process of determining price, he pointed out that the cost of production as an objective quantity is an aspect of price formation. [8] He found the common ground between subjectivism and objectivism in that both approaches can be compatibly established in the debate over the cost of production. Thus, Wicksteed related the subjective individual to society, and he considered society to be intersubjective.

5 Concluding Remarks

This study shows that the concept of opportunity cost in the early 20th century was not discussed in the context of an opposition between subjectivism and objectivism, at least as presupposed by Buchanan (1969) and Boettke and Rosolino (2020). The debate over opportunity cost in the English-speaking world until the early 20th century was not consistently argued from the standpoint of either objectivist or subjectivist positions. Rather, given that opportunity cost is related to both the supply and demand sides of price determination, objectivism and subjectivism developed harmoniously in this context. In this sense, there was a transitional period until the 1910s during the time of Wicksteed and Davenport.

This suggests that the history of the opportunity cost theory of the Chicago and the LSE schools must be reviewed. The meeting of the Chicago and the LSE, as we introduced at the beginning of this paper, was brought about by Knight (1934a; 1935), and the background of this event is a series of dialogues between Knight (1921; 1928) and Robbins (1934). They had a clear distinction between subjectivism and objectivism; Robbins (1934) criticized Knight's opportunity cost as "opportunity cost as a technical quantity" based on this perspective and referred to Wicksteed in his subjectivist opportunity cost theory as a counterpart. This led to Knight's rediscovery of Wicksteed (1934b, 1935). However, this view may have lost sight of the characteristics of the opportunity cost theory during the transitional period.

In fact, Wicksteed, who lived during the transitional period, held both subjective and objective views of cost based on the collective scale, and his opportunity cost view was compatible with rather than opposing them. Robbins adopted and developed a subjectivist opportunity cost in the LSE school; in that sense, the inheritance relationship between Robbins and Wicksteed is only partial. On the other hand,

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[8] Wicksteed pointed out the relationship between "cost of production" and price, but did not believe that "cost of production" determines price (Wicksteed [1910]1933, p. 358).

Davenport also tried to view subjectivism and objectivism as mixed, rather than opposing one. Davenport's argument reinterpreted the concept of production cost derived from the classical school from a subjectivist perspective; although it differs from Wicksteed's approach, they shared the same position of finding both subjective and objective aspects in opportunity cost.

In other words, Buchanan continued the history of the above line and explained opportunity cost theory by distinguishing between the subjective and objective, but arguments in the transitional period could have been made without separation. Rather, the combination was the actual way in which opportunity cost theory was developed as a pre-history in the English-speaking world.

This also calls into question the portrayal of history in terms of the oppositional axes of subjectivism and objectivism. The oppositional viewpoint of subjectivism and objectivism shown here was a new concept that emerged after the marginal revolution. Therefore, it is impossible to distinguish between subjectivism and objectivism by using traditional classical theories. Until the beginning of the 20th century, the period covered by this study, such a distinction has not yet been taken for granted.

For example, Wicksteed related a subjective individual scale to an objective collective scale. The collective scale acts as an intersubjective social consensus. This appears to be a different approach to that of the Austrian school, which begins with strict methodological individualism. However, it may have been natural for him to think of the individual and society as linked. The same can be said for Davenport's price theory, which is determined from both the demand and supply sides, in which the objective quantity of supply affects the subjective demand.

It is necessary to pay attention to the fact that the traditional dichotomy (for example, supply and demand, and individual and society) was taken for granted and accepted before the division between subjectivism and objectivism was not presupposed. This may have been one of the factors that led to the development of the opportunity cost theory in different ways in the Austrian school. More research should be conducted to examine the actual history of opportunity cost theory and clarify its connection to the later history of the Chicago and LSE schools.

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