


A Microeconomic Analysis of the OER Textbook Market

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Abstract

This article will use economic theory to understand the textbook markets better. In the last several decades the topic of textbook costs has been a prevailing discussion among researchers, faculty, economists, policymakers, etc. The high costs of textbooks have been viewed as barriers to accessing course materials which are invaluable in the understanding of the course content, absorption of knowledge, and successful completion of the course. These barriers have been viewed as hindering students' equity because the economically disadvantaged would become educationally disadvantaged. From a positive economics perspective, a scientist would provide the reason for such an occurrence. However, from a normative economics perspective, a policymaker would recommend decreasing the costs of textbooks by cheaper alternatives, such as Open Educational Resources (OER). This article provides an economic analysis explaining the market forces that shape the costs of traditional textbooks and OERs and possible recommendations using economic analysis.

Keywords

OER Textbooks, Open Educational Resources, Equity in Academia

1. Introduction

Researchers have been concerned with the rapidly increasing costs of traditional textbooks for several decades. Researchers are divided into two fronts: proponents and opponents of the traditional textbooks. The proponents view the increasing costs as a reflection of market forces and specifically the increasing demand for textbooks as well as the need to compensate for the creation of intellectual property associated with the provision of authors' knowledge into the textbook. On the other hand, the opponents of expensive traditional textbooks, consider these exponentially increasing costs as barriers to access course materi-

al. Eliminating these barriers to freely access the reading content is paramount in the learning process, absorption of knowledge, and successful completion of the course. These financial obstacles have been viewed as damaging students' equity. The economically disadvantaged students are the ones who become deprived of knowledge access, and as a result, become also educationally disadvantaged. This debate emerges often in economics and is known as positive and normative economics. A positive economist explains how the world is, while a normative economist explains what ought to be. From a positive economic perspective, a scientist would provide the reason for such an occurrence. However, from a normative economic perspective, a policymaker would recommend decreasing the costs of textbooks by cheaper alternatives, such as Open Educational Resources (OER). OER includes content that is freely accessible to students. More specifically, UNESCO defines it as "teaching, learning and research materials in any medium, digital or otherwise, that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions" (2012 Paris OER Declaration; UNESCO, 2021), while Hewlett Foundation defines it as "teaching, learning, and research resources that reside in the public domain or have been released under the intellectual property license that permits their free use and re-purposing by others" (Hewlett Foundation, n.d.).

This article contributes to this debate by presenting a different view and offering an economic analysis that explains how the market forces shaped and determined the costs of traditional textbooks versus OERs. The article is structured as follows. First, it provides a short overview of the literature presenting the problem which demands a solution. Then, it offers an economic analysis of how the market forces lead to differences in the pricing between the various textbook options and attempts to find an optimal solution.

2. Literature Review

Proponents of OER have offered this alternative as a cost-efficient substitute for high-cost commercial textbooks. The cost savings have been immense. For example, the conversion of courses into adopting OER content has decreased the average costs to students by \$80 per student according to one study (Fisher, 2018). Furthermore, the ease of content access has been shown to have decreased students' withdrawal and increased persistence rates (Clinton & Khan, 2019). Another research study that collected faculty perceptions in multiple campuses in the Virginia Community College System (VCCS) reported several benefits of OER, such as providing a friendlier environment for diversity due to its customizable content feature, improving student engagement due to the free and ease of access of OER content, and creating new inspirational and pedagogical ideas (Kimmel, Bol, Ryan, & Esqueda, 2022). Furthermore, many other studies have shown no loss in students' learning and performance due to conversion from traditional textbook use to OER content (Clinton & Khan, 2019; Hilton, 2020;

Tila & Levy, 2022; Parsons, 2023). This means that the shift comes with many benefits while at no cost to student-quality learning.

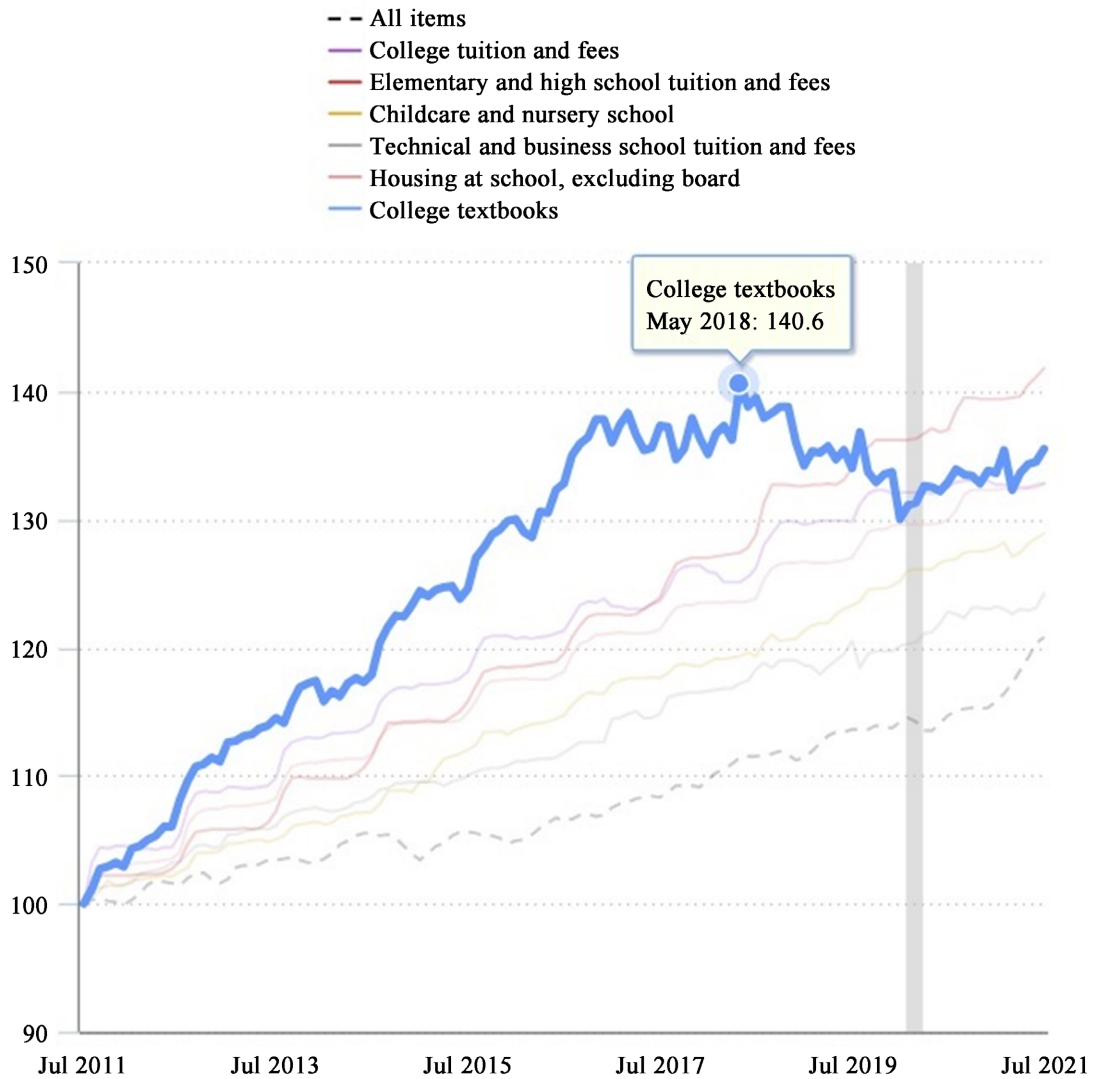
However, other scholars have chosen to be more cautious in evaluating the implementation and use of OER content. For example, Bagar-Fraley (2022) argued that, while OERs decrease the monetary costs of textbooks that students face, they “might not be the hoped-for miracle” we had been looking for. The incorporation of useful and relevant material in the OER content becomes the responsibility of faculty members, who might not always be prolific in technological advancement, legal issues, accessibility of content, and inclusion of all types of learners, etc. Some might also lack the training and support from libraries, learning centers, etc. According to another survey, the faculty reports the concern and need to focus and improve outcomes on fostering equity, diversity, and inclusion while using and curating OER content (Sergiadis, Smith, & Uddin, 2024). Others consider the use of OER as a potential advantage in fostering equity, diversity, and inclusion (Stanberry, 2022). Other scholars voice their concerns on how to assist faculty to improve teaching, effectively adopt OER resources, and embrace culturally relevant and sustaining teaching practices (Katz & Van Allen, 2022). Hence, many intertwining issues exist that make the implementation of OER even more complex than simply saving costs and fostering equity of content access. This article will contribute to the literature by providing an analysis from an economic perspective. First, it will provide evidence that the cost of textbooks has increased even when adjusted for inflation. Second, it will provide an economic model showing the market forces that lead to the different equilibrium prices for these different products, commercial textbooks, and OER textbooks. Lastly, it will provide future challenges and recommendations using economic theory.

3. Economics Analysis of Textbooks

3.1. Microeconomic Analysis of the Traditional Textbook Market

The first question is to substantiate that indeed the costs of textbooks are high. Prices of most consumer goods and services increase over time and such an average annual increase in price is known as inflation. So, the first task is to understand whether textbook costs have increased at similar rates to the inflation rate or more. **Figure 1** shows the gap between the cost of living and the cost of college textbooks. According to the National Center for Education Statistics (**Table 330.40, 2022**), the cost of living has increased as shown by the Consumer Price Index (CPI), but there is a significant gap between the cost of living of a typical consumer and the cost of textbooks. The latter has been increasing exponentially and now reaching about \$ 1200 annually. As Tila (2023) and Tila and Levy (2022) have shown through the comparison of the Consumer Price Index, which represents the cost of living, and the costs of traditional textbooks over time, the latter has increased substantially more than the former. Second, through the various surveys and interviews with students, it has been reported that these

Consumer price indexes for tuition and school-related items, not seasonally adjusted, July 2011-July 2021 (July 2011 = 100)



Click legend items to change data display. Hover over chart to view data.
 Shaded area represents a recession as determined by the National Bureau of Economic Research.
 Source: U.S. Bureau of Labor Statistics.



Note: Figure is retrieved from BLS, TED Economics Daily. “Cost of college tuition has remained stable since September 2019.” (Bureau of Labor Statistics & U.S. Department of Labor, 2019).

Figure 1. Textbook costs compared to the consumer price index.

costs are negatively and significantly impacting students.

The high cost of traditional textbooks has created barriers to access for many students who would either give up food expenses to pay for textbooks (CUNY students), refrain from taking certain courses, withdraw, or receive a lower grade. Specifically, a student enrolled in one of the colleges of the City University of New York, stated that:

“I can work as many jobs as I can but [the high cost of textbooks] is still

going to affect me. If I'm able to pay the tuition, I won't be able to pay for the textbooks. If I pay for the textbooks, I won't have enough money for tuition" (CUNY, 2018: p. 4).

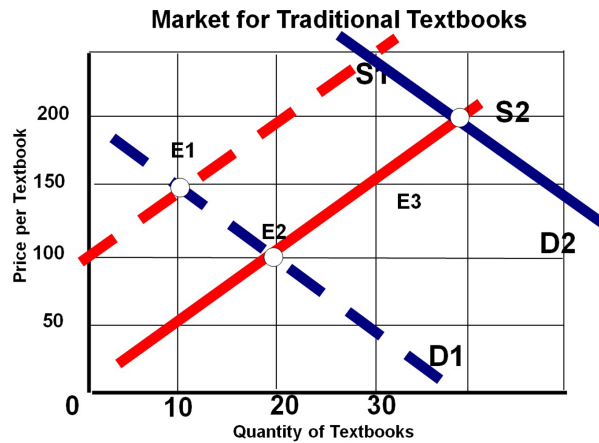
Hence, it is an undeniable fact that the prices of traditional textbooks have increased, even when adjusted for inflation, meaning the cost increase of a typical consumer's cost of living. How did we get here? Why has the cost of textbooks increased a lot more than the cost of all other consumer products?

3.2. Microeconomic Analysis of the Traditional Textbook Market

The second question is why the textbook costs are high. As usually happens with intellectual property, the owner should be compensated for its creation. This incentive-driven scheme is the core of the development of research and development. This is the same reason that a patent is legally granted to the inventor to allow only the creator of the invention to receive the profits while banning others from copying it. The stream of profits, which is enabled due to the demand for this invention and limiting its supply by only allowing the inventor to produce, allows for compensation for the efforts, risks, and liabilities that the inventor undertook. The opportunity to receive these profits from a successful invention encourages agents (companies, artists, scientists, writers, researchers, etc.) to invest their time and efforts. This same applies to a writer, in this case, a textbook writer. Hence, from this perspective, it is understandable why textbooks have a high price to compensate for the time and efforts of the writers and researchers in making the textbooks.

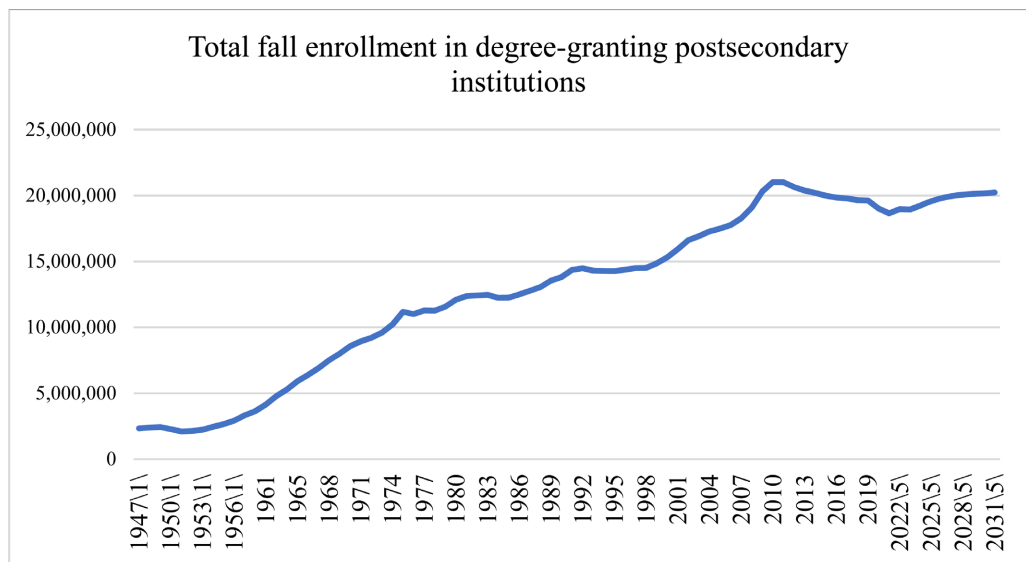
On the other hand, one might argue that textbooks cover content that does not substantially change over time, meaning that the marginal costs of publishing a new edition are minor, and eventually the average costs of textbooks should be going down due to economies of scale. However, such an occurrence has not happened because, while supply may have shifted to the right due to lower costs, the demand for textbooks has increased more, leading to a new equilibrium with higher quantity transacted and at a higher equilibrium price. **Figure 2** shows the supply and demand diagram for traditional textbooks. Over time, supply has increased due to the decreasing costs of producing traditional textbooks, which is shown through the shift of supply to the right and the new equilibrium movement from E1 to E2. This represents more transacted textbooks and lower prices (e.g., \$100 instead of \$150).

However, this is temporary, because, at the same time, the demand for textbooks has increased as shown by the increased number of enrolled students in the United States colleges. As shown in **Figure 3**, student enrollment has about quadrupled compared to 1947. This increase in student enrollment leads to an increase in demand for textbooks by these students. The increase in demand is shown as a shift of demand to the right leading to a new equilibrium E3. Since the increase in demand has been larger than the increase in supply, it has led to an increase in the equilibrium price in E3 compared to the initial equilibrium



Note: The Figure is constructed through the author’s calculation.

Figure 2. Supply and demand diagram for traditional textbooks.



Note: The graph is constructed through the author’s calculation using the data from total fall enrollment in degree-granting postsecondary institutions, by attendance status, sex of student, and control of institution: Selected years, 1947 through 2031, retrieved from Table 303.10 of the National Center for Education Statistics. https://nces.ed.gov/programs/digest/d22/tables/dt22_303.10.asp

Figure 3. Student Enrollment in the United States from 1947 to 2019.

price in E1. Ceteris paribus, the increase in student enrollment and decrease in textbook costs to the publishing companies have been interacting in the supply and demand diagram in **Figure 3**, shown as the ultimate result of an increase in traditional textbook prices for the students.

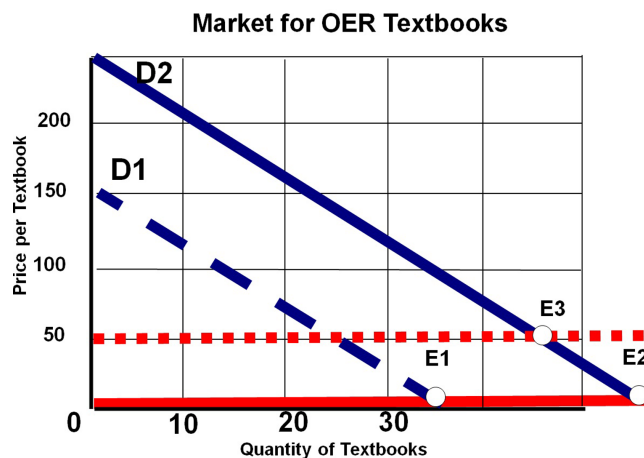
3.3. The Entry of OER in the Textbook Market

The data shows that the cost of traditional textbooks has increased, even when adjusted for inflation. The Florida Virtual Campus Office of Distance Learning has conducted large-scale surveys for several years, including more recently in 2016, 2018, and 2022. In particular, the 2016 data showed that 66% of about

22,000 respondents reported having not purchased a required textbook due to excessive costs (2016). Consequent surveys found that 64.2 percent of respondents in 2018 and 53.5 percent of respondents in 2022 refrained from purchasing the textbook due to the costs (Florida Virtual Campus, 2019, 2022). One may wonder why the percentage of respondents who reported having not purchased the required textbook due to excessive costs has decreased over time given the fact that costs have increased over the years. This might be indeed the result of the use of more OER content textbooks that have decreased the need for students to purchase a textbook. These surveys are large-scale. For example, the 2022 survey collected data from more than 13,000 students from Florida's public colleges and universities from March through May 2022. While this number of students reporting difficulties purchasing the required textbooks has decreased, it is still substantially high encompassing more than half of the respondents being affected by the high costs of textbooks (Florida Virtual Campus, 2016, 2018, 2022). Similar results have been retrieved even when interviewing students and collecting qualitative data. For example, a Kingsborough Community College student stated "I can work as many jobs as I can but [the high cost of textbooks] is still going to affect me. If I'm able to pay the tuition, I won't be able to pay for the textbooks. If I pay for the textbooks, I won't have enough money for tuition" (CUNY, 2018: p. 4). Something had and had to be done to allow students who are willing to learn to access the course material and learn. What meaning would academic institutions have if they denied students the possibility to learn? It is important to state that some students might not even know the additional high costs of course material that are added to the tuition paid. When a contract is made, the costs should be clearly stated, while when a student enrolls and pays the tuition, he/she might not be clear about the costs that course materials throughout the two or four years of college. From a contractual perspective, there is a possible argument against these "hidden" and unexpected costs.

To assist students with these high and detrimental costs that create barriers to accessing learning content assigned by the instructor of the course, OER was introduced as an available cheaper alternative. The entry of OER content into the classroom has been advocated by several stakeholders, such as institutions, colleges, faculties, and even city levels. More recently, this is advocated in the strategic plan known as "CUNY Lifting New York," which is targeting to transform CUNY into the nation's leaders of student-centered and equity-driven universities by 2030. The support provided to faculty and the decrease in transaction costs, such as creating and publishing self-curated material, has helped many scholars to create OER content. Figure 4 shows the supply and demand diagram model for the OER textbooks. While the demand for OER textbooks is still downward sloping, the supply for OER textbooks is perfectly elastic, meaning that an infinite number of such OER content is available for free, or price of zero.

This perfectly elastic supply of OER textbooks adds another important difference between OER textbooks and traditional ones. As shown in Figure 4, when demand for the product increases, it will not affect the equilibrium price. This



Note: The Figure is constructed through the author's calculation.

Figure 4. Supply and demand diagram for OER textbooks.

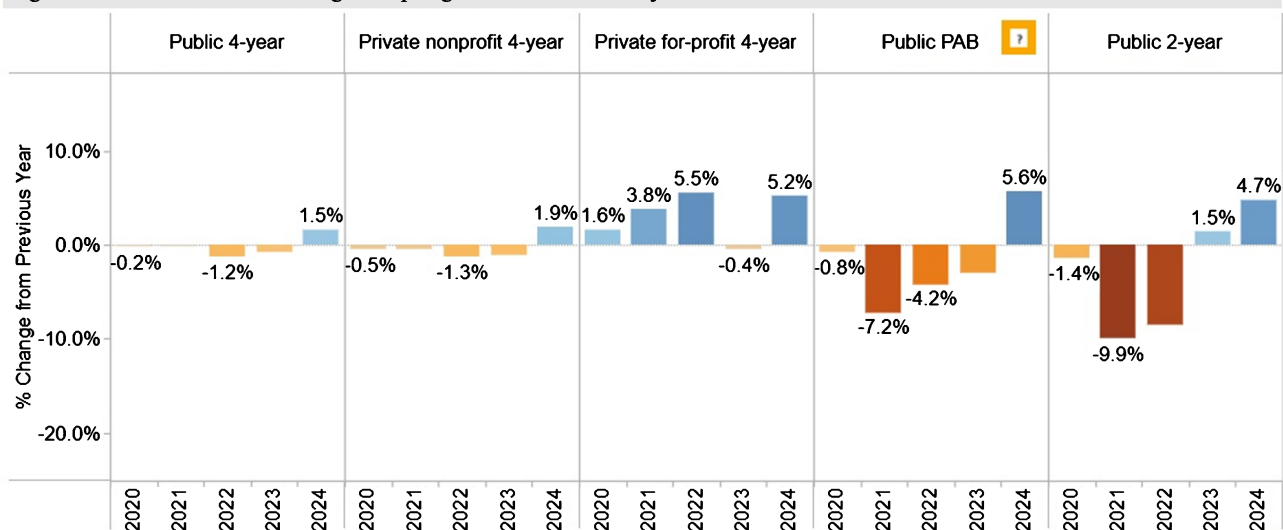
means that the equilibrium price for OER textbooks will remain zero regardless of how much the demand for them will increase. On the other hand, **Figure 2** shows that an increase in the demand for traditional textbooks increases the equilibrium price due to an upward-sloping supply. Another note in **Figure 4**, is the example of OER textbooks having a small price that covers solely printing and related services. If the printing or support services cost \$50, it will always be constant regardless of how much the demand increases over time.

However, one issue with **Figure 4** is that it assumes a zero cost of the provision of OER content while it is known that there is no such thing as a free lunch. There are costs to content curation, but those are being carried by the faculty members, the institution with its offices such as Centers for Learning, Libraries, etc., or other sources of funding. As shown in **Figure 4**, these costs associated with the OER content are not passed over to the students, who are the content consumers.

4. Discussions and Conclusions

This article presented a microeconomic analysis to improve understanding of how the effects of traditional textbook costs on student access to learning material and the rise of OER as a cheaper substitute. The economic analysis is in alignment with the data collected by several surveys, as well as providing a better understanding of the why and how we might find a solution. The economic analysis shows the success and usefulness of OER materials, assuming that quality is not jeopardized. This article introduces a new way of viewing this textbook cost problem as well as paving the way for furthering new perspectives using economic theory and legal background. The additional economic theory that might be considered in the future is the transition of the textbook industry into a GIG economy whereby production is provided by freelancers rather than large publication companies. Another perspective might be that of Ronald Coase who argues firms emerge when market transaction costs are high (Coase, 1937, 1988).

Figure 1.1 Annual Percent Change in Spring Total Enrollment by Sector



Note: The graph was retrieved from the current term enrollment estimates table of the national student clearinghouse research center.

Figure 5. Student enrollment from 2010 to 2023 by college type.

However, the inventions in technology and the emergence of artificial intelligence may have significantly decreased the transaction costs of searching, editing, and publishing content and textbooks. This might diminish the need for large publishing corporations and give rise to individual agents that singularly create content. This GIG economy might be transforming the education and printing industry.

The analysis of the traditional and OER textbooks should continue as there are still questions to be answered and new questions to emerge. One interesting question that might seem to emerge in the future is the differences in enrollment between private and public schools. OER textbooks are more present in public schools than private ones. However, the intriguing question is why enrollment has increased in private schools compared to the public as shown in **Figure 5**. Why are students opting to pay higher tuition while arguing about high textbook costs? These are questions that still need answers but only time will tell.

Using microeconomic theory, this article attempted to provide a view of OER from a different angle and assist in better understanding the textbook markets. This understanding might pave the way for foreseeing how the future of textbooks markets and suggesting a balance whereby we should be conscientious of the costs of knowledge but also aware that incentives are the driving force of knowledge creation.

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Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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