

Cost Disease Theory: Classical Influences and Modern Applications

By Lucy Poole

Year after year, university students wait for the dreaded announcement that their institution's tuition costs are increasing – again. Despite the consistency with which this news is reported, most students have yet to be presented with a satisfactory explanation for these persistently rising costs.

In 1966, William Baumol and William Bowen published *Performing Arts – The Economic Dilemma: A Study of Problems Common to Theater, Opera, Music and Dance*. Their initial goal was to explain the rising costs that plagued these important cultural sectors of the economy. However, it soon became the foundation for the cost disease theory, going beyond performing arts to explain rising costs in health care, education, welfare programs, sanitation, performing arts, police protection, and many other sectors.¹ Although Baumol and Bowen co-authored the original paper, Baumol has since been at the forefront of cost disease discussions. His 2012 book, *The Cost Disease*, will be the primary theoretical source throughout this paper, and cost disease theory is often referenced as “Baumol’s Disease” or “Baumol’s Cost Disease Theory.” Baumol has investigated these industries and found that below-average productivity growth may be the source of costs that rise faster than inflation.² This idea is central to discussions of rising costs in higher education, a uniquely complex field that warrants further investigation. Baumol’s body of research, along with the countless offshoots inspired by his initial theorizing with Bowen, has greatly enhanced our understanding of market economy trends in the face of rapid technological innovation.

First introduced in the 1960s, cost disease theory has origins in classical economic thought of the eighteenth and nineteenth centuries. Adam Smith and Karl Marx’s insights into commodity prices, technological change, and the measurement of economic variables contribute to a greater understanding of Baumol’s model and its assumptions. Additionally, this historical analysis will demonstrate the ambiguity of the cost disease theory and

some of the debates that have surfaced since its original publication, especially surrounding higher education costs.

While Baumol has repeatedly emphasized the erroneous tendency of economists to make predictive claims, he reluctantly admits that his ideas “may well be the longest valid forecast ever to emerge from economic analysis.”³ In light of this claim, a deeper exploration of the mechanics and history of the cost disease theory is essential to better understand the world we live in.

Section I: An Overview of Cost Disease Theory

The fundamental assumption: Stagnant vs. progressive sectors

The cost disease theory requires a simplifying assumption: the classification of all economic production into one of two sectors, stagnant or progressive.⁴ Although the diversity of production within any given economy likely lends itself to more than two natural divisions, a straightforward binary approach highlights Baumol’s main points without unnecessarily complicated classifications. Baumol recognizes that intermediary categories exist in the real world, and some of his later works attempt to apply cost disease principles to sectors that cannot easily be categorized as either stagnant or progressive.⁵ By including only the most crucial variables, like productivity measures, costs, and “sticker” prices (the price charged to consumers of a good or service), cost disease theory can simulate past economic behaviour and forecast into the future.⁶

The stagnant sector includes service industries that observe relatively little productivity growth from year to year. Productivity is defined in economics as a ratio of production inputs to production outputs and is an important driver of overall growth in the economy.⁷ Consider the production of two goods: private music lessons and smartphones. In my lifetime alone, technological

advancements have created enormous capacity for the production of smartphones, greatly increasing productivity and lowering costs. On the other hand, the productivity of a private music lesson is unlikely to notably change over time, as teachers cannot increase their output without cutting down on the time spent with each student. In this example, private music lessons are an example of a personal service, rather than a tangible good. These services require individual human attention to be produced. The causes of slow productivity growth in the personal services sector are twofold. First, these services have physical and technical qualities that demand individualized human labour. Second, the negative social connotations associated with the replacement of human handiwork by machines can cause reluctance towards the adoption of labour-saving techniques. As social perceptions often link labour time with product quality, it is not difficult to imagine resistance towards labour-saving technology in sectors like medicine and education.⁸ The effects of slow productivity growth in the stagnant sector are the focus of the cost disease theory.

Alternatively, the progressive sector, is characterized by rapid productivity growth facilitated by continued technological innovation. This sector includes most machinery-heavy production processes, such as agriculture, textiles, and electronics. Industries in this sector consistently have higher output yield and declining prices because they are more easily able to shift from human labour when faced with rising wage requirements.⁹ Consider the following passage from Baumol, which uses employment data from the 2007-2009 recession in the U.S. to illustrate the difference in labour substitutability across the stagnant and progressive sectors:

Between December 2007 and June 2009, the motor vehicles and parts sector lost 35 percent of its jobs – the largest loss of any U.S. employment sector. The twenty sectors with the largest declines in employment also included textile mills (24 percent job loss), construction (17 percent), and manufacturing (14 percent). Ever increasing efficiency in these nonstagnant sectors – a key component of the cost disease – has allowed them to keep up with demand despite laying off workers. In contrast, the stagnant sectors actually gained jobs during that period. Because these sectors are far less amenable to

labor-saving changes, they cannot continue to provide their services with fewer workers.¹⁰

We see here that changes in economic conditions can increase employment in one sector at the expense of the other. The interdependency of these two distinct economic sectors gives rise to the phenomenon that Baumol and Bowen call the cost disease.

Productivity growth and real prices

Somewhat paradoxically, the same productivity increases that boost overall economic growth are to blame for the unfortunate effects of the cost disease.¹¹ It is unlikely for the economy to grow without facing increasingly high costs in the personal services. As such, the effects of the cost disease will only become more pronounced as gross domestic product (GDP) rises. To arrive at this conclusion, we must examine the effects of productivity increases on costs and prices in both the progressive and stagnant sectors.

Rising productivity in the progressive sector puts an upward pressure on the wages of workers employed in those industries. All else equal, these climbing wages have a negative impact on production when wages are assumed to be a significant component of cost. However, because productivity is also rising, the same quantity of labour-time can now yield a greater quantity of output. Firms can afford to increase the wages of their workers, because the “new” productive capacity resulting from technological change offsets the wage increases by an equal or greater amount.¹² The ability to increase production without increasing per-unit production costs allows firms to sell their products at lower real prices, the nominal prices that are increasing more slowly than the rate of inflation. This makes them accessible to more consumers.

This outcome does not seem like any sort of “disease.” In fact, most would argue that lower commodity prices are, overall, beneficial to society. However, this claim is more complex than it may seem at first glance, and as such will be examined in greater detail in a later section.

To reveal the true nature of the cost disease, we must examine the effects of this same productivity increase in the progressive sector on stagnant-sector services. Consider a scenario in which the stagnant sector’s wages are unresponsive

to changes in the progressive sector. Technological change and increased productivity drive up the wages in the progressive sector, making employment there relatively more attractive than in the stagnant sector. Facing a choice between a relatively high wage in the progressive sector and a relatively low one in the stagnant sector, workers will have little incentive to provide services in the latter. This decline in labour power in the stagnant sector may result in some services dying out.¹³ The undesirability of this outcome is apparent when considering that these stagnant sector workers include doctors, nurses, teachers, and first responders, who provide some of the most essential services to our populations.

The alternative to this service-less society is one where stagnant sector wages are rising approximately at pace with those of the progressive sector. This critical stage more readily discerns the negative impacts of differing productivity growths. Contrary to the progressive sector, the costs associated with higher wages cannot be offset by productivity growth – recall, by construction of the model, that the stagnant sector sees little to no growth in productivity from year to year. With slow productivity growth, the burden of rising costs will be placed on consumers, who must now pay higher prices. An important trade-off arises falling commodity prices come at the expense of rising prices in service industries where steady productivity growth is not possible. It is this principle that forms the basis of cost disease theory.

The cost disease: Contextual fluke or persistent pattern?

My main objective thus far has been to establish productivity growth rates as the source of price deviations from the prevailing rate of inflation in an economy. This is far from the whole story, as this assertion does little to show the implications of the cost disease for society. Baumol builds on the main principles of his theory to try to answer two big questions: should we expect the cost disease situation to persist, and, if it does, will society be able to afford the rising costs?

The persistence argument depends on whether we expect to see significant shifts in the relative productivity between sectors: those that have historically been stagnant will become progressive, and vice versa. Baumol answers this quite simply: “economic sectors usually do not fluctuate

haphazardly between periods of relatively slow and relatively rapid advance in productivity. Rather, the industries in which productivity was expanding slowly a century ago are by and large still the laggards today.”¹⁴ This statement supports the position that the cost disease conditions present in today’s economy should be expected to persist, with the gap in real price changes between the stagnant and progressive sectors growing larger. In the face of continuous productivity increases in progressive sector industries, stagnant sector workers will demand higher wages, which will in turn increase costs and prices.

To conclude this section on the main ideas of the cost disease theory, we must consider the affordability of these price increases for society. Interestingly, the cause of the cost disease, rising productivity in progressive-sector industries, is also the reason why societies should not worry about being able to afford an equal or greater amount of expenditure year after year on all goods and services.¹⁵ With each new technological development that enhances productive capacity, the purchasing power of consumers grows to the point where they can afford to purchase more of all goods and services, even those like health care and education whose costs seem to be rising beyond a threshold of affordability. Given a fixed income, consumers will not be forced to shift their consumption patterns towards manufactured goods and away from personal services. What will occur, instead, is a change in the share of any individual’s expenditures on personal services, relative to manufactured commodities.¹⁶ As this trend is observed across nearly all households, it can be aggregated to the overall economy.

To demonstrate the dramatic effect of relative price changes on relative expenditure levels, Baumol performs an extrapolated estimation of the share of expenditures on health care in the year 2105, using 2007 data on Health Spending and Resources from the Organisation for Economic Co-operation and Development. He uses 2005 data to establish a baseline for comparison, which shows 15 percent of U.S. GDP spent on the health care sector and 85 percent elsewhere. Following the current trends, he illustrates that we can expect the share of health care sector expenditures to rise to upwards of 62 percent in 2105 just one hundred years later.¹⁷ Leaving just 38 percent of GDP for all other costs might initially appear as a cause for alarm. However, it is important to recall that,

as health care prices rise, commodities prices will fall. To summarize: a smaller share of expenditures on non-health costs does not mean that we will not be able to afford our current volume of purchases. Continued productivity results in greater purchasing power that will facilitate a greater consumption of goods whose real prices are falling, without having to sacrifice consumption of increasingly expensive personal services.

Section II: Ties to Adam Smith and Karl Marx

From this initial overview, it becomes clear that the power of the cost disease model stems from the fact that it is relatively simple and addresses questions that are of great interest and importance to society. As a student of economic history, the profound influences that classical economists continue to have on even the most contemporary theories have become all the more clear to me. Recognizing these influences yields a deeper understanding of today's theories and a greater appreciation for theories that came before. This section will identify a number of ideas in Baumol and Bowen's cost disease theory whose origins can be traced to the famous writings of Adam Smith (*On the Nature and Causes of the Wealth of Nations*, originally published in 1776) and Karl Marx (*Das Kapital* ["Capital"] Volume I, originally published in 1867). These two works offer insight into the effects of commodity prices and technological change, both of which are central to cost disease theory.

Falling commodity prices: a blessing or a curse?

The analysis of commodity prices is central to the cost disease theory and was also discussed at great length by both Adam Smith and Karl Marx. Before addressing the normative questions surrounding commodity prices, we should first investigate the claims that commodity prices tend to fall as an economy grows and technological change raises worker productivity. This is undoubtedly Baumol's view and an uncontested fact in our time, given the long history over which this pattern has been observed. When Smith and Marx wrote, however, the state of technology and its growth was vastly different than today. Yet, both authors foresaw decreases in commodity prices as an economy developed, even if they perceived the consequences of these falling prices in different ways.

As Adam Smith wrote nearly a century prior to Marx, it is natural to begin with a consideration of his thoughts on commodity prices. In Smith's view, the source of wealth in any economy is the extent of its division of labour.¹⁸ With each worker performing a smaller, more specialized task within the overall production process, productivity could increase drastically. Increased skill and dexterity, time saved, and greater incentive to develop labour-saving machines would all play a part in the reduction of labour required for a given amount of output.¹⁹ The result of this drastic improvement in labour productivity would be falling commodity prices enabled by lower production costs. Marx, who emphasized the role that technological change plays in lowering commodity prices, essentially came to this same conclusion. As technology becomes more and more sophisticated and specialized, the lower production costs resulting from a higher capital/labour ratio would lead to price reduction.²⁰

Up until now, the most important effect of falling commodity prices has been that lower prices make more products accessible across all socioeconomic groups. Smith countered the claim that greater accessibility of products would be detrimental to the economy by saying that "the answer at first seems abundantly plain. Servants, labourers, and workmen of different kinds, make up the far greater part of every political society. But what improves the circumstances of the greater part, can never be regarded as an inconveniency to the whole. No society can surely be flourishing and happy, of which the greater part of the members are poor and miserable."²¹ The reality that these falling commodity prices will cause personal services to become relatively more expensive is missing from Smith's analysis, as these ideas largely post-date his time. Smith, who was a proponent of capitalism because he believed it would improve the living conditions of low-income populations, would be disheartened to learn that it is this group that suffers the most from the effects of the cost disease. Without assistance from the government, namely, the implementation of social programs, access to essential services will become more and more limited for larger percentages of the population. Following today's trends, we can only expect low-income populations to receive a smaller and smaller share of the benefits from increased output as time goes on.²²

By the nineteenth century, Marx's writings on falling commodity prices were more nuanced.

According to Marx, one of the most significant outcomes of falling prices would be the centralization of capital in the hands of very few large capitalists, as “the battle of competition is fought by the cheapening of commodities.”²³ Capitalist production would be characterized by a constant battle to lower production costs through innovation to be able to reduce prices and capture a larger share of the market relative to other competing firms. Over the course of this continuous process, more and more “small capitalists” would be absorbed by the proletariat working class as they become unable to keep up with cost-reducing technological progress.²⁴ After losing their market share, the means of production of these small capitalists would often be taken by the larger ones, only helping to speed up the process of centralization. With time, it only becomes more difficult for new capitalists to enter and challenge the quasi-monopolistic positions of the large producers, as the minimum capital outlays required to carry on a business only grow larger.²⁵

It should be clear to readers that Marx uses this argument to show how the majority of the population, the working class, pays the price of the centralization of capitals. Interestingly, when Baumol raises the idea of oligopolistic competition in *The Cost Disease*, it is to reassure readers that investment in research and development (R&D) will continue to increase. In contemporary economic growth theory, technological innovation and ideas drive an economy forward.²⁶ Without investment in R&D activities, innovation and its subsequent productivity grinds to a halt. Using an analogy called a “Red Queen Game,” Baumol emphasizes that large, competitive firms cannot survive without constant re-investment in R&D. If investment slowed or stopped, firms would lose Marx’s battle of the “cheapening of commodities” and be forced out of business by competitors who had implemented further cost-saving technologies in their production processes.²⁷

The different ideas presented by Smith, Marx, and Baumol demonstrate that a normative analysis of falling commodity prices is not simple. Baumol does not side with one camp, and instead accepts that the question presented is a difficult one. He would agree that increased access to products is largely a good phenomenon, while also recognizing that low-income populations will be increasingly burdened by the cost disease if appropriate government interventions do not take place. More-

over, Marx’s fear of oligopolistic competition and the increased centralization of capitals is countered by Baumol’s assurance that this market structure is conducive to the continual investment in research and development necessary for economic growth.

The quality-quantity dichotomy in Baumol and Marx

Standardizing the measurement of economic variables is a crucial step to creating a sound economic model. In the cost disease theory, Baumol is particular about how productivity should be measured. Specifically, he insists that productivity must be measured from a purely quantitative standpoint (a simple ratio of inputs to outputs), without adjusting for changes in quality.²⁸ The early writings of Marx also address the necessary distinction between quantity and quality in measuring economic variables. It will be shown that the two theorists do not address this flawed conflation in an identical context, but that they both seek to clarify essentially the same point.

Marx’s distinction between quality and quantity comes from his analysis of the nature of commodities. In the early chapters of *Capital* Volume I, Marx focuses on the difference between use values and exchange values. The depth of this comparison stems from the frequency with which Marx observed the two terms being used interchangeably or used erroneously in place of one another. This mistake, according to Marx, leads to a fundamental misunderstanding of the exchange value of commodities, whether they be expressed in terms of other commodities, or a universal equivalent, such as money.²⁹

To briefly summarize chapter one of *Capital*, Marx classifies use value as the utility (usefulness) of an object, which cannot exist in isolation from the physical form of the commodity itself.³⁰ This type of value is independent of the amount of human labour power that is required for its realization. Exchange value, on the other hand, is derived entirely from the amount of socially necessary labour time embodied in the production of any particular commodity. Commodities do not, as is commonly believed, obtain value from their special physical properties, but rather from an amount of homogeneous, abstract human labour that is determined by the social context of a given place in a given time.³¹

We will see subsequently that Baumol shares Marx's main point – that is, focusing on quality (i.e., use-value) over quantity (i.e., exchange-value derived from human labour-time) can impede our true understanding of a theoretical analysis. In the case of Marx, this mistake will cause market observers to wrongly attribute the values for which goods are exchanged to the usefulness and distinct properties they possess. In reality, it is the labour quantity that dictates exchange values (and prices), even if we do not see these “calculations” or determinations explicitly in our day-to-day transactions. According to Marx, “the determination of the magnitude of value by labour time is therefore a secret” and “hidden under the apparent fluctuations in the relative values of commodities. Its discovery, while removing all appearance of mere accidentality from the determination of the magnitude of the values of products, yet in no way alters the mode in which that determination takes place.”³²

Baumol's presentation of the quality-quantity dichotomy occurs in his discussion of productivity measurement. Evidently, the rate at which productivity grows is central to cost disease theory, so it is of utmost importance that its measurement be standardized. Baumol cites examples of authors who have used alternative measures of productivity in attempts to refute the existence of the cost disease, when in fact they are proving the existence of a completely different trend.³³ Recognizing the reality of the cost disease and its likely persistence is a crucial step to the adoption of policies that will best respond to its effects. Research conducted without careful consideration of the standardized measurement of productivity could thus be unnecessarily harmful.

With that in mind, let us turn to Baumol's quality-quantity distinction – that between quality-adjusted and quality-unadjusted measures of productivity.

The innovations brought to market by entrepreneurs generally have at least one of two purposes: quality improvement, whose goal is to attract more customers by offering them a better product, and cost saving, typically achieved through a reduction in the labor time required to produce the commodity. There are two corresponding productivity-growth concepts, which we can call quality-improving productivity growth and cost-saving productivity growth. Both

are vital for the general welfare, but in this book, with its focus on the cost issue, the latter concept is the more relevant.³⁴

Quality-unadjusted productivity is an exclusively quantitative measure of cost-saving productivity growth. It is calculated by dividing total output by the number of labour hours required for the production of the product.³⁵ Quality-adjusted productivity, on the other hand, adjusts the gross output value according to the improvements in quality embodied in the new product relative to its predecessor.³⁶ It may not initially be obvious how Baumol's two measures of productivity growth are related to Marx's use-value and exchange-value, save for a few terminological similarities. Consider the following quote, which brings together their two ideas, published hundreds of years apart: “if we want to test for the presence or absence of the (cost) disease, quality-unadjusted figures are most pertinent because we are merely asking how much money consumers must pay for a product, not how desirable that product is.”³⁷ Hopefully, the parallels between Marx's and Baumol's ideas are more visible here. Baumol's quality-unadjusted measures are closely related to monetary costs, which are the most common measure of Marx's exchange value in today's economies. In contrast, quality-unadjusted productivity corresponds more closely to Marx's use-value, or the unique benefits derived from the possession or consumption of a specific good or service. Just as Marx attempts to explain away the belief that the exchangeable value of commodities is derived from the nature of the products themselves, Baumol drives home the important fact that, when discussing the cost disease, questions of quality improvement should not obstruct a purely monetary analysis.

Climate change: bringing together commodity prices and quality

Both Baumol and Marx's discussions of the quality/quantity distinction are quite abstract. It may be helpful to apply their ideas to an issue that is of great significance today: climate change economics. As mentioned, falling commodity prices may be beneficial to society as they expand the consumption side of the market and increase the accessibility of several useful and potentially necessary products. However, Baumol is quick to acknowledge that low prices may not be entirely reflective of the net so-

cial benefit that a product brings to society. As prices fall and production speeds up, pollution, other harmful wastes, and overcrowding can begin to have detrimental environmental effects that are not factored into commodity prices.³⁸ Marx, who wrote long before climate change became a part of everyday vocabulary, foresaw a similar problem. He notes that the environmental cost of natural resources – which are undoubtedly a necessary input for many products – is not included in measures of exchange value: “If an instrument. . . is not the product of human labour power, it transfers no value to the product. It helps to create use-value without contributing to the formation of exchange-value. In this class are included all means of production supplied by Nature without human assistance, such as land, wind, water, metals, and timber in virgin forests.”³⁹ Recall that Marx’s definition of exchange value (or simply, value) rests entirely on the embodiment of human labour in commodities that results from the expenditure of human labour-power. Baumol and Marx come to the same conclusion that prices are often under-representative of the true costs to society brought on by the market exchange of commodities. This demonstrates a potential drawback of the cost disease model, which ignores quality for simplicity. In Baumol’s initial analysis, falling commodity prices are presented positively. However, when considering the effects of falling commodity prices on the environment, neither Marx’s concept of exchange value nor Baumol’s cost disease paint a complete picture of the effects of falling prices on society.

Section III: The Cost Disease in Higher Education

Debate surrounding the cost disease and its many components also sparks an analyses of higher education. Education is repeatedly cited as a classic victim of the cost disease, suggesting that there is little doubt of the presence of the disease in this sector.⁴⁰ Higher education is often grouped together with other personal services in Baumol’s works, rather than examined independently. However, further reading on this topic reveals that cost analyses of higher education are not as straightforward as those conducted for sectors like health care and performing arts.⁴¹ The following section will introduce different perspectives on the topic of rising education costs, using studies on cost trends in the United States.

Criticisms of the higher education cost disease framework

The presence (or absence) of the cost disease in higher education is a conversation that receives considerable attention, in part due to difficulties in defining higher education costs. Institutional costs are not exclusively related to teaching and learning outcomes, but include a myriad of other costs including housing, bookstores, athletics, and food services.⁴² It is difficult to distinguish between these parts of overall cost, as many are deeply interconnected. Isolating costs on a school-per-school basis, let alone in a standardized way that makes cross-comparisons across institutions possible, is extremely difficult.⁴³ Bowen acknowledges these difficulties in cost measurement, but assures readers that the details of institutional costs will only complicate matters, and not change the overall conclusions of the analysis.⁴⁴ Other researchers interested in higher education costs are not so easily convinced by this dismissal of cost complexity.

On a similar note, the use of quality-unadjusted figures for productivity does not sit well with many researchers who believe that productivity in higher education cannot, and should not, be measured in isolation from quality improvement. For example, in their investigation of cost in higher education, Bosworth and Triplett concluded that productivity was in fact increasing due to quality improvements, and as such, rising costs could not be attributed to the cost disease.⁴⁵ As we have already seen, the use of quality-adjusted productivity measures strays from Baumol’s preferred method of cost disease analysis. Both are valid, but we must ask whether it is valuable to analyze costs without considering quality changes. Baumol would say yes, but there are many other economists who support the National Academy of Sciences’ assertion that “quality should always be a core part of productivity conversations, even when it cannot be fully captured by the metrics.”⁴⁶ It has been posited that Baumol’s avoidance of quality improvements is not due to a true belief in its unimportance to cost disease theory, but because its exclusion yields measures of productivity that conform more closely to his ideas.⁴⁷

These counterarguments make the higher education cost disease difficult to test and validate. Kimball and Luke suggest that this ambiguity in cost measurement is the reason for the tendency to revert to older studies when discussing the cost

disease in higher education. These earlier studies present seemingly uncontested results by assuming away some of the cost measurement issues that complicate today's analyses.⁴⁸

Original investigations into the cost disease in US higher education

Despite the above caveats, studies of the cost disease in higher education remain valuable. Even critics of higher education cost disease theory concede that it can accurately explain some historical periods of cost increases.⁴⁹

William G. Bowen, a student of William Baumol and co-author of the original cost disease paper, is widely considered the eminent researcher on the higher education cost disease. His initial study analyzed cost trends at the University of Chicago, Vanderbilt University, and Princeton University from 1905 to 1966. Results showed that costs per student at these three universities rose significantly faster than indices of general, economy-wide costs. This trend was consistent throughout this period, excepting the Great Depression and the two war periods.⁵⁰

Cost disease theory has prevailed as the dominant theory in higher education cost analysis, generally beating out Howard Bowen's competing "revenue theory of costs." Howard Bowen's theory can be summarized by the idea that universities will spend everything they can "in the pursuit of dominance, prestige, and influence."⁵¹ In his view, revenue is the only constraint on spending and costs, and each institution will spend as much as it can raise.⁵² The most notable difference between these two theories is that Howard Bowen's is specific to higher education. As we have seen, Baumol and Bowen's cost disease theory can be more widely applied to many personal services, including education.⁵³

The implications of rising costs in the education sector are similar to those for all stagnant-sector services. The circumstances of particular institutions will depend in part on their individual characteristics, for example, their status as a public or private university. Although Bowen's initial study was conducted with a representative sample of private institutions, he has repeatedly assured the relevance of cost disease theory to public institutions as well.⁵⁴

With continued growth, education costs will continue to rise to the point where they be-

come unaffordable for more and more segments of the population. To maintain a sufficient level of education among the population, governments must either step in to provide additional funding (in the case of public institutions), or the institutions themselves must allocate more resources toward student aid, lowering the burden of tuition on families.⁵⁵ As the government steps in to maintain service industries, Baumol predicted in 2012 that the public sector share of GDP will rise with economic growth.⁵⁶ Adam Smith shared this idea, predicting that the role of the state would become more expansive as society accumulated greater wealth.⁵⁷ Smith emphasizes that governments must play a role in offering education, as accessible education helps provide a higher quality of life for the working class, countering unequal opportunities stemming from the division of labour.⁵⁸

Moving forward: Addressing the rising costs of education

The above analysis suggests quite a bleak future for the affordability of higher education. However, the investment of government resources in this sector may not be the only hope for solving these inaccessibility issues.

Firstly, to address some of the issues presented at the beginning of this section, research on high education requires an improvement of available data. It is much easier to face issues as complex as these when armed with clear, accessible, and centralized information. The prioritization of public accessibility and transparency in data collection along with new research on the relationship between the productivity of education and spending are important steps to the realization of this goal.⁵⁹

In addition to improving the collection and dissemination of cost data in the education sector, there is also potential for cost-saving through practical changes in teaching and learning.

Researchers have studied the effects of primarily online education long before it became the norm for many students during the COVID-19 pandemic. A 2015 study yielded robust results in favour of the hypothesis that costs per student are lower at public institutions where most student learning takes place online.⁶⁰ While an analysis of quality changes resulting from the shift to online learning was missing from this discussion, another study found "no statistically significant differences in standard measures of learning outcomes (pass

or completion rates, scores on common final exam questions, and results of a national test of statistical literacy) between students in the traditional classes and students in the hybrid-online format classes.”⁶¹

This finding suggests that students should not face significant barriers to academic success by choosing to undertake online learning. In fact, Bowen identifies some means through which online education could be made more beneficial to students than traditional teaching. These include the potential for technology to bring together diverse perspectives from students all over the world, time saved by pre-recorded lectures that give professors more time to spend on providing timely, individualized feedback to students, and increased faculty collaboration encouraged by sophisticated technologies.⁶² This argument, however, does not highlight the potential drawbacks of online learning. These include increased feelings of social isolation, unequal access to technology, and greater potential for academic misconduct (cheating and plagiarism).⁶³ Specific measures to target the inequities associated with online education are necessary to make sure the benefits of increased productivity in education are widespread. In light of the mass transition to online learning during the ongoing pandemic, research on the productivity effects of online learning will only increase. The necessity of online education throughout the last two years has sparked innovation in this sector that is likely to persist long after the end of the pandemic.

Cost disease theory seeks to demystify some of the most important economic cost trends observed over the last two hundred years. Since the theory’s initial publication, it has been widely applied to service industries that are critical to the functioning of any society and the well-being of its population. Looking at the cost disease through the lens of classical economics reveals the “grey areas” of cost and productivity analysis. This ambiguity has sparked great debate in the discourse surrounding personal services, most notably higher education. More broadly, discussions on climate change economics show how much the conclusions of economic models are shaped by how the variables of interest are defined. While the rising costs in the higher education sector may not be wholly attributable to the cost disease, it can help to understand the cost increases that seem to occur, without fail, for reasons that never seem to be properly explained. At surface level, the negative effects of the cost disease may seem inevitable. Yet, the cost

disease theory relies on the assumption that slow productivity growth will persist in the service industries. As we’ve seen throughout the COVID-19 pandemic, the provision of services is evolving as new technologies raise productivity. Rather than slow as the pandemic reaches an end, it is more likely that these innovations will trigger a domino effect of research that could turn the tide of rising costs. Awareness of historical cost trends should not create a sense of hopelessness for the future, but rather spark new, innovative approaches that ensure that critical services, like education and health care, remain available and accessible to all.

Endnotes

1. William J. Baumol, *The Cost Disease* (New Haven: Yale University Press, 2012), 22.

2. William J. Baumol and William G. Bowen, *Performing Arts – The Economic Dilemma* (New York: The Twentieth Century Fund, 1966).

3. William J. Baumol, “Macroeconomics of Unbalanced Growth: The Anatomy of Urban Crisis,” *The American Economic Review* 57, no. 3 (1967): 415. <https://doi.org/10.1177/003754977402200505>; Baumol, *The Cost Disease*, xix.

4. Baumol, “Macroeconomics,” 415.

5. Baumol, “Macroeconomics,” 416.

6. Dimitri Zenghelis, “What do economic models tell us?” Grantham Research Institute, London School of Economics and Political Science, May 6, 2014, <https://www.lse.ac.uk/granthaminstitute/news/why-economic-models-tell-us-so-little-about-the-future-2>.

7. Baumol, *The Cost Disease*, 83.

8. Baumol, *The Cost Disease*, 20.

9. Baumol, “Macroeconomics,” 416.

10. Baumol, *The Cost Disease*, 24.

11. Baumol, *The Cost Disease*, 44.

12. Baumol, *The Cost Disease*, 21.

13. Baumol, *The Cost Disease*, 44.

14. Baumol, *The Cost Disease*, 22.

15. Baumol, *The Cost Disease*, 50.

16. Baumol, *The Cost Disease*, 51.

17. Baumol, *The Cost Disease*, 51; OECD, “Health Spending and Resources,” in *OECD in Figures 2007* (Paris: OECD, 2007).

18. Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations* (Oxford: Bibliomania.com Ltd, 2002), Book 1, <http://www.bibliomania.com/2/1/65/112/frame1.html>.

19. Smith, *Wealth of Nations*, Book 1.
20. Karl Marx and Frederick Engels, "Manifesto of the Communist Party," *Marx/Engels Selected Works* 1, ed. Andy Blunden, trans. Samuel Moore, (Moscow: Progress Publishers 1969), 105.
21. Smith, *Wealth of Nations*, Book 1.
22. Baumol, *The Cost Disease*, 54.
23. Karl Marx, *Capital – A Critique of Political Economy Volume I* (London: Penguin Books Ltd, 1990): 777.
24. Marx, *Capital*, 777.
25. Marx, *Capital*, 480.
26. Charles I. Jones and Dietrich Vollrath, "The Economics of Ideas," in *Introduction to Economic Growth Third Edition* (New York: W.W. Norton & Company, Inc., 2013), 95.
27. Baumol, *The Cost Disease*, 56.
28. Baumol, *The Cost Disease*, 84.
29. Marx, *Capital*, 162.
30. Marx, *Capital*, 126.
31. Marx, *Capital*, 126.
32. Marx, *Capital*, 168.
33. Baumol, *The Cost Disease*, 86.
34. Baumol, *The Cost Disease*, 83.
35. Baumol, *The Cost Disease*, 83.
36. Baumol, *The Cost Disease*, 83.
37. Baumol, *The Cost Disease*, 84.
38. Baumol, *The Cost Disease*, 72.
39. Marx, *Capital*, 312.
40. Bruce E. Buxton, "Thoreau's Pencil and Baumol's Cost Disease," *The Journal of Education* 185, no. 1 (2004): 49, <https://doi.org/10.1177/002205740518500104>; Michael Maillo, "Diagnosing William Baumol's Cost Disease," *Chicago Booth Review*, May 18, 2017, <https://www.chicagobooth.edu/review/diagnosing-william-baumols-cost-disease>.
41. Bruce A. Kimball and Jeremy B. Luke, "Historical Dimensions of the 'Cost Disease' in US Higher Education, 1870s to 2010s," *Social Science History* 42, no. 1 (2018): 31, <https://doi.org/10.1017/ssh.2017.38>.
42. Kimball and Luke, "Historical Dimensions," 31.
43. Kimball and Luke, "Historical Dimensions," 38.
44. William G. Bowen, *Higher Education in the Digital Age* (Princeton: Princeton University Press, 2013), 4.
45. Barry Bosworth and Jack E. Triplett, "Productivity Measurement Issues in Service Industries: 'Baumol's Disease' Has Been Cured," *Economic Policy Review* 9, no. 3 (2003): 30, <https://EconPapers.repec.org/RePEc:fip:fednep:y:2003:i:sep:p:23-33:n:v.9no.3>.
46. National Academy of Sciences in Bowen, *Higher Education*, 6.
47. Kimball and Luke, "Historical Dimensions," 36.
48. Kimball and Luke, "Historical Dimensions," 30.
49. Kimball and Luke, "Historical Dimensions," 51.
50. Bowen, *Higher Education*, 3.
51. Henry E. Brady, "Let's Not Railroad American Higher Education!" *PS: Political Science and Politics* 46, no. 1 (2013): 97, <https://www.jstor.org/stable/43284286>.
52. Dylan Matthews, "Why There's No Reason for Big Universities to Rein in Spending," *Washington Post*, September 2, 2013, <https://www.washingtonpost.com/news/wonk/wp/2013/09/02/the-tuition-is-too-damn-high-part-vi-why-theres-no-reason-for-big-universities-to-rein-in-spending>.
53. Robert B. Archibald and David H. Feldman, "Explaining Increases in Higher Education Costs," *The Journal of Higher Education* 79, no. 3 (2008): 269, <https://doi.org/10.1353/jhe.0.0004>.
54. William G. Bowen, *The Economics of the Major Private Universities* (Berkeley: Carnegie Commission, 1968), 72.
55. Bowen, *Higher Education*, 5.
56. Baumol, *The Cost Disease*, 63.
57. Smith, *Wealth of Nations*, Book 1.
58. Jack Russell Weinstein, *Adam Smith's Pluralism* (New Haven: Yale University Press, 2013), 64; Smith, *Wealth of Nations*, Book 1.
59. Jane V. Wellman, "Improving Data to Tackle the Higher Education 'Cost Disease,'" *Planning for Higher Education* 38, no. 3 (2010): 25, <http://search.proquest.com/libproxy.mta.ca/scholarly-journals/improving-data-tackle-higher-education-cost>.
60. David J. Deming et al., "Can Online Learning Bend the Higher Education Cost Curve?" *The American Economic Review* 105, no. 5 (2015): 500, <https://doi.org/10.1257/aer.p20151024>.
61. Bowen, *Higher Education*, 48.
62. Bowen, *Higher Education*, 44, <https://doi.org/10.34190/ejel.19.3.2168>.
63. Alaa Zuhir Al Rawashdeh et al., "Advantages and Disadvantages of Using e-Learning in University Education: Analyzing Students' Per-

spectives,” *The Electronic Journal of e-Learning* 19,
no. 2 (2021): 109-110.