

# Tuition Inflation, Government Intervention, And Price Elasticity

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## **Abstract**

*The price of a college degree has been rising for decades. According to data from the 2020 Digest of Education Statistics, the average undergraduate tuition and fees for full-time students at 4-year, degree-granting postsecondary institutions increased 56% beyond inflation from the 1999–00 academic year to the 2019–20 academic year. Although the average cost of attending college has increased dramatically, the rate of tuition increase is not uniform. Rather, it varies between types of institutions.*

*The purpose of this research is to study escalating college tuition and fees from the perspectives of government intervention and market competition. We argue that the wide availability of federal-government-sponsored financial aid and student loans has led to subsidized tuition inflation. However, rather than there being a direct relationship between federal financial aid and escalating tuition, as many scholars have ventured, we believe that this relationship occurs through student tuition price elasticity and market competition. In light of our analysis, rising tuition is the result of government intervention in the academic business environment. The example of the 1978 airline industry deregulation suggests that removing government intervention in an attempt to encourage price competition would help mitigate tuition inflation. Society, in turn, would benefit from the resulting lower tuition and higher college attendance rate.*

**Key Words:** College Tuition, Price Elasticity

**JEL Codes:** I21, I28, L10, L11

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## **1. Introduction**

The price of a college degree has risen over the past several decades. According to data from the 2020 Digest of Education Statistics, the average undergraduate tuition and fees for full-time students were \$10,697 at 4-year, degree-granting postsecondary institutions in the 1999–00 academic year, after adjusting for inflation. In the 2019–20 academic year, the above figure increased to \$16,647, representing a 56% increase beyond inflation over the 20 intervening academic years.

A chart from Perry (2021) displays the relative price increases over the 21-year period from 2000 to 2020 for 14 selected consumer goods and services, as well as average hourly wages. During that time period, the Consumer Price Index (CPI) increased by 54.6%. Over the sampling period,

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the price of earning a college degree has grown more quickly than almost any other sector of the economy, second only to hospital services.

The chart suggests that activities that are heavily affected by government rules and subsidies are prone to be less efficient and, thus, costlier than others. Examples include college tuition and fees, hospital services, and medical care services. Activities that are subject to competition, both nationally and globally, are more in line with market discipline. New cars, household furnishings, and cellphone services have exhibited constant or even declining costs to consumers.

Although the average cost of attending college has increased dramatically relative to overall inflation over the last decades, the rate of increase is not uniform. Rather, it varies between types of institutions. According to the same data mentioned above, the average undergraduate tuition and fees for full-time students amounted to \$5,088 at 4-year, degree-granting public institutions; \$22,991 at 4-year private non-profit institutions; and \$13,160 at 4-year private for-profit institutions in the 1999–00 academic year, after adjusting for inflation. In the 2019–20 academic year, the above prices increased to \$9,349 at 4-year public institutions; \$35,807 at 4-year private non-profit institutions; and \$14,957 at 4-year private for-profit institutions. The above increases over 20 academic years represent an 84% increase at public institutions, a 56% increase at private nonprofit institutions, and a 14% increase at private for-profit institutions. Indeed, students experienced different rates of increase at different types of institutions.

Colleges and universities operate under different structures than businesses do. The various incentives and constraints under which academic institutions operate shape their behavior. Only part of the income that sustains academic institutions is derived from the tuition they charge students, and the degree of reliance on tuition revenue varies among institutions. Most colleges and universities are non-profit enterprises. For-profit universities, such as the University of Phoenix, are a relatively recent phenomenon. The majority of for-profit colleges' and universities' revenue is derived from tuition income, while public institutions rely the least on tuition revenue.

Several factors have been argued to contribute to the rising cost of college. Interested readers should refer to Archibald and Feldman (2011) and Ginsberg (2011) for a comprehensive review. The purpose of this research is to investigate the escalating college tuition and fees from the perspectives of government intervention and market competition. We argue that the wide availability of federal-government-sponsored financial aid and student loans leads to subsidized tuition inflation. However, instead of a direct relationship between federal financial aid and escalating tuition, as many scholars have suggested, we believe this relationship is mediated by student tuition price elasticity and market competition. As a result, students experienced the non-uniform rates of tuition increases. In the following sections, we provide a literature review concerning inflated college tuition from the perspective of government-intervened market competition, along with an analysis of the data in this regard. We then propose the theory that government intervention in the form of student financial aid lowers student tuition elasticity. This is followed by a discussion of our analysis and concluding remarks.

## **2. Literature Review and Data Analysis**

The price of a college degree has increased substantially. Figure 1 shows the tuition and fees for all Title-IV-participating, degree-granting, 4-year postsecondary institutions from the 1995–96 academic year to the 2019–20 academic year. The tuition and fees are adjusted for inflation to the 2019–20 constant dollar. In 2019–20, the average tuition and fees for all 4-year, degree-granting postsecondary institutions were \$16,647, while in 1995–96, they were \$9,633. The above figures

represent 73% growth beyond inflation over the sampling period.

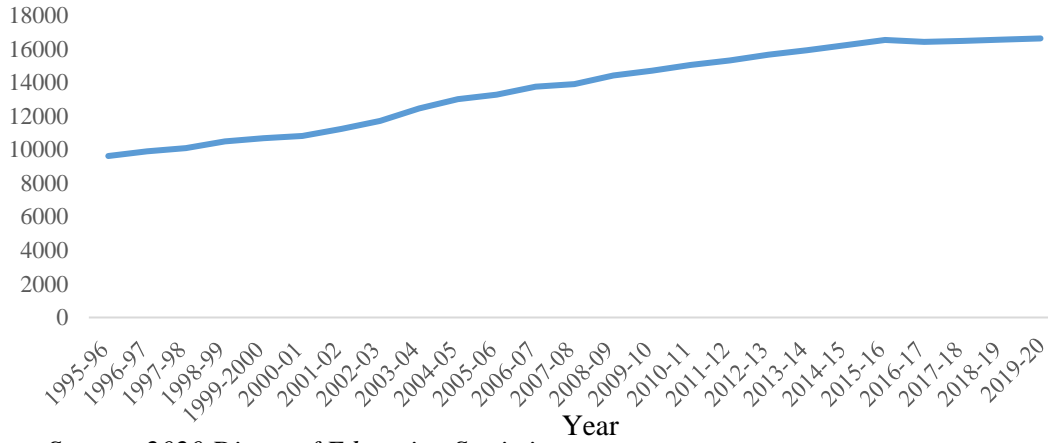
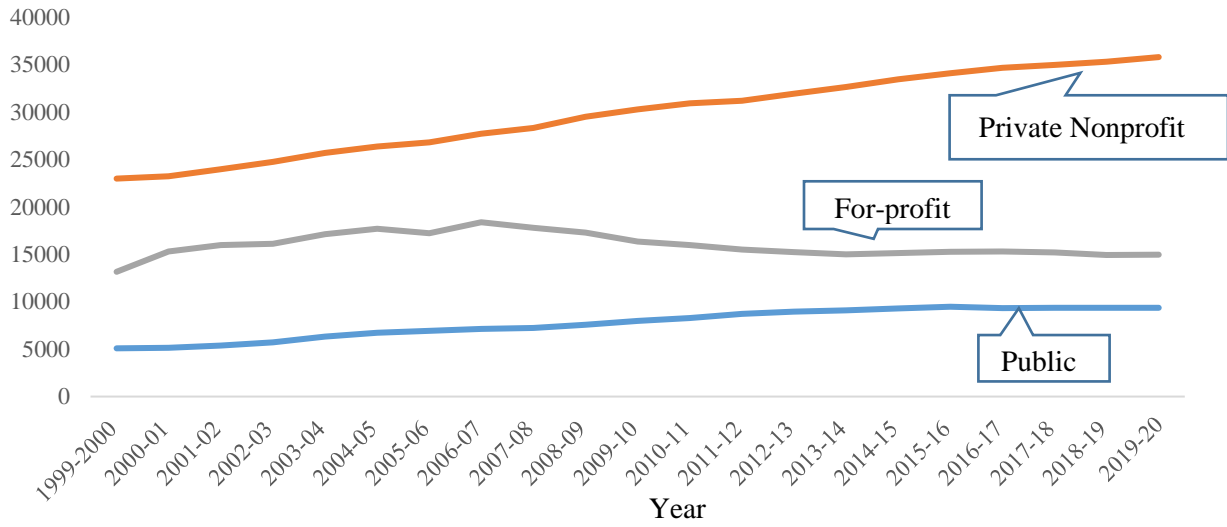


Figure 1 - Tuition and Fees for all Title-IV-Participating, Degree-Granting, 4-Year Colleges and Universities (2019–20 Constant Dollars)

While all postsecondary institutions saw their tuition and fees grow over the past decades, tuition growth at three types of colleges and universities, public, private non-profit, and private for-profit, tells a very different story. Figure 2 shows tuition growth rates for these three types of postsecondary institutions from 1999 to 2019, with 1999 being the first year tuition data for private institutions became available. Over the sampling period, attending a private non-profit institution was the most expensive option, second only to attending a private for-profit institution. Public colleges and universities were the least expensive choice for students. Nonetheless, over the observation period, the tuition and fees at public colleges and universities grew at a rate of 84%, private non-profits experienced a 56% growth rate, and private for-profit institutions saw only a 14% increase. Clearly, the growth rate of tuition and fees is not uniform.



Source: 2020 Digest of Education Statistics

Figure 2 - Tuition and Fees: Public, Private Non-Profit, and For-Profit Institutions (2019–20 Constant Dollars)

Higher education is a business. It has its own marketplace, and it abides by the basic principles of economics (Lin, 2022). All colleges and universities competing in the market are subject to the same set of domain variables, such as market demand, market supply, and factors related to the operating environment. As mentioned above, Archibald and Feldman (2011) and Ginsberg (2011) provide comprehensive reviews of the variables believed to be the drivers of increasing tuition. We have no intention of replicating these studies. Rather, the purpose of this research project is to shed light on the factors that contribute to dissimilar tuition growth between different types of colleges and universities. We attempt this task in the context of government intervention and market competition.

In 1987, then-Education Secretary William J. Bennett offered a theory that linked federal loan subsidies to the rising cost of tuition. He claimed that “if anything, increases in financial aid in recent years have enabled colleges and universities blithely to raise their tuitions, confident that Federal loan subsidies would help cushion the increase... Federal student aid policies do not cause college price inflation, but there is little doubt that they help make it possible.” Then, in a New York Times interview conducted in 2013, Bennett reiterated that subsidies were unlikely to be the only cause of rising tuition, stating that “Federal student aid makes it easier for colleges to do what they’re going to do anyway, which is raise tuition.” His hypothesis, later termed the Bennett Hypothesis, has dominated debates surrounding the cost of postsecondary education for the past several decades.

Wide-ranging research has attempted to ascertain the accuracy of this contention, with varied results. Some studies have found it to be broadly convincing. In a study by Cellini and Goldin (2014), for-profit institutions and programs receiving federal student aid charged 78% more for tuition than comparable programs in non-Title-IV-participating institutions. The authors note that the difference in the dollar values charged between these two types of institutions was roughly equivalent to the average Pell Grant award, suggesting that participating institutions raise tuition to capture aid and do not pass the savings on to students. The findings reported in Cellini and

Goldin (2014) were anchored by another study, that of Lucca, Nadauld, and Shen (2017). By analyzing data from three sources, Lucca et al. (2017) found that tuition did, in fact, change in response to increases in Pell Grants and student loan limits. Their point estimates suggest that a \$1 increase in the subsidized and unsubsidized caps resulted in 58-cent and 17-cent increases in nominal tuition, respectively. Also, a \$1 increase in the Pell Grant maximum translated into a 37-cent increase in tuition. The estimates taken from the above studies provide strong support for the Bennett Hypothesis. Similar examples can be found in Robinson (2017) and Warshawsky and Marchand (2017).

Other researchers have found little to no correlation between federal loan subsidies and rising tuition costs. Harvey, Williams, Kirshstein, O'Malley, and Wellman (1998) analyzed data on the costs, prices, and generalized subsidies of colleges and universities from 1987 to 1996, as well as the published research on the relationship between federal aid and tuition costs. They found no evidence for a causal relationship between federal loans and rising tuition costs. In an attempt to address the determinants of resident and non-resident tuition and enrollment at public universities, Rizzo and Ehreberg (2003) found no evidence that public universities increase in-state or out-of-state tuition levels in response to increased federal or state financial aid for students. In a statistical analysis report by Cunningham, Wellman, Clinedinst, and Merisotis (2001), the authors considered data from 1988 to 1998 and found no associations between most of the aid variables and changes in tuition in either the public or private non-profit sectors.

Examinations of the literature on the Bennett Hypothesis reveal a lack of consensus on the relationship between federal financial aid and rising tuition. The reason for these diverse observations, we believe, is that the variables—federal financial aid and tuition rates—have two distinctive dynamics. As shown in Figure 2, college tuition rose between the 1999–00 academic year and the 2019–20 academic year. However, the historical data on federal financial aid obtained from the US Department of Education show that the maximum federal Pell Grant remained unchanged, at \$4,050, from 2003–04 to 2006–07 and, at \$5,550, from 2010–11 to 2012–13. However, the tuition and fees of colleges and universities continued to increase during these periods. Further, the historical federal student loan limit data suggest that the loan limits did not increase from 1996 to 2007 or from 2008 to 2021. However, tuition continued to rise during these periods. During the overlapping years, namely 2003–07 and 2010–13, total federal financial aid was unchanged, but tuition steadily increased. This observation leads us to believe that changes in federal financial aid, in and of themselves, are unlikely to account for rising tuition in a complex economic system such as the higher education marketplace. Instead of there being a direct relationship between federal financial aid and rising tuition, their relationship could be indirect, leading to the lack of consensus on the impact of federal financial aid on tuition. As a result, we contend that government intervention in the form of financial aid has significantly changed the market variables for institutions of higher education, which has led to escalating tuition.

According to Bennett, Lucchesi, and Vedder (2010, p. 9), “The growth in the for-profit institutions sped up in the mid-twentieth century following World War II when federal financial assistance for students increased... Further accelerating the growth of the sector was the reauthorization of the Higher Education Act in 1972 which permitted tuition subsidies, like the Pell Grant, to be used by students at for-profit institutions.” According to Deming, Goldin, and Katz (2013), from 2000 to 2010, real federal expenditures on the Pell Grant program more than tripled, from \$10 billion to \$35 billion (in 2010 dollars). In contrast, over the same years, state tax appropriations for higher education increased by only about 5% in real terms, with zero real growth since 2007. In the face of sluggish growth in state funding, for-profit colleges and universities have

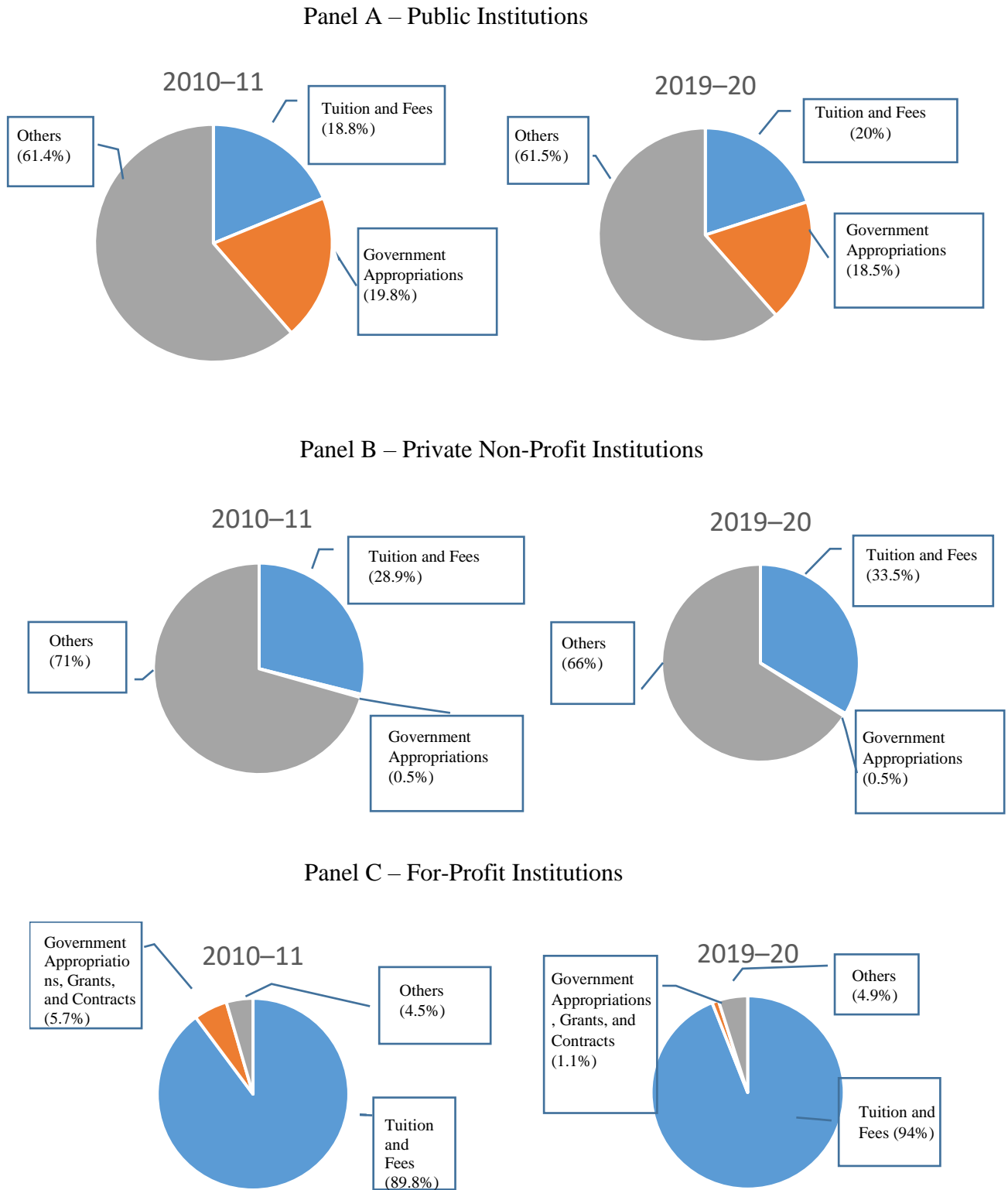
taken advantage of expanded federal student aid and grown rapidly. For-profit colleges and universities were responsible for nearly 30% of the total growth in postsecondary enrollment and degrees awarded in the first decade of the twenty-first century.

For-profit organizations aim to maximize profits and then deliver these profits to the company's owners and shareholders. Non-profit organizations aim to meet society's needs, and they have no owners. They are also called mission-driven organizations, and their missions depend on the needs they are intended to meet. Instead of maximizing profits, non-profits are simply concerned with ensuring their revenues are greater than their costs.

According to Deming et al. (2013), the programs offered by for-profit institutions are largely funded by federal student financial aid, particularly federal grants and loans. A study by Cellini and Goldin (2014) implies that the Bennett Hypothesis can be employed to explain the 14% tuition increases observed in the for-profit sector. Given that for-profit institutions became eligible to use Title IV funds in 1972, these for-profit institutions are supported by taxpayer-funded student financial aid to almost the same degree as public and private non-profit institutions. As a result, federal financial aid can help to explain only 14% of the 84% and 56% increases in tuition at public and private non-profit colleges and universities, respectively. Thus, 70% and 42% of the tuition increases at public and private non-profit institutions cannot be explained by the expansion of federal financial aid. This observation leads us to question why the tuition for public and private non-profit postsecondary institutions has increased more dramatically than that for for-profit institutions? In other words, if the Bennett Hypothesis is true, the tuition increases for non-profits should be at least equivalent to those of their peers in the for-profit sector. However, the truth is quite the opposite.

The aforementioned federal support mainly provides financial assistance for individual students and specific research projects, while state appropriations primarily pay for the general operations of public institutions. Appropriations are money set aside by the government to be used for a specific purpose. Because non-public institutions cannot depend on public funding, they rely more heavily on tuition income to recover the costs associated with their provision of educational services. Based on data from the 2019–20 National Center for Education Statistics (NCES), Figure 3 illustrates the revenue derived from each source as a percentage of total revenue for 4-year colleges and universities for the 2010–11 and 2019–20 academic years. Panel A shows that about 19% of public institutions' revenue was obtained from government appropriations. However, government support shows a declining trend from the 2010–11 academic year to the 2019–20 academic year. The reliance on tuition revenue increased slightly during this period, from 18.8% to 20%. Panel B suggests that government appropriations contribute about 0.5% of the total revenue for private non-profit institutions. As a result, tuition made up 28.9% of total revenue in 2010–11, and this percentage grew to 33.5% in 2019–20. Unsurprisingly, due to a lack of government appropriation support, private non-profit colleges and universities depend more heavily on tuition income than their public companions. Panel C illustrates the heavy reliance on tuition income among for-profit institutions.

Figure 3 – Sources of Revenue for Colleges and Universities



In the 2010–11 academic year, 89.8% of total revenue was obtained from the tuition and fees that these institutions charged students. The above figure grew to 94% in the 2019–20 academic year. Because the NCES data do not differentiate government appropriations from government grants

and contracts for for-profit institutions, Panel C can only illustrate the proportion of total revenue derived from government appropriations, grants, and contracts collectively. As a result, the reliance on government appropriations as a source of revenue is not comparable between for-profit institutions and public and private non-profit institutions.

Figure 3 suggests that, first, for-profit institutions depend more heavily on tuition revenue than non-profit institutions. In the 2019–20 academic year, whereas for-profit 4-year institutions received 94% of their revenue from tuition and fees, public 4-year institutions and private non-profit 4-year institutions received 20% and 33.5% of their revenues from tuition and fees, respectively. For this reason, it is unsurprising that many for-profit institutions have developed business strategies that involve large investments intended to expand enrollment. For-profit institutions spend much more on advertising and recruitment than non-profit institutions.

Second, there seems to be a negative relationship between government support and dependence on tuition income. Non-public colleges and universities rely more heavily on tuition revenue than public institutions due to a lack of government appropriations. Furthermore, as state and local governments reduce appropriations, the dependence on tuition income rises in public institutions.

Third, government appropriations lead to lower tuition. Around 19% of the total revenue for public institutions is derived from government support, and attending public colleges and universities is the least expensive choice for students.

Fourth, in what is perhaps the most stunning observation, Figures 2 and 3 suggest a negative correlation between dependence on tuition revenue and the tuition growth rate. Public colleges and universities depend the least on tuition income, but their tuition has inflated the most quickly. Over 90% of the total revenue of for-profits is derived from tuition income; however, their tuition has exhibited the smallest growth rate.

Some scholars argue that tuition must increase as governments reduce appropriations. This argument is defensible on its own merits. Private institutions generally command higher tuition rates than their public companions, and the reliance on tuition income among public institutions rises as government appropriations decrease. Indeed, some portion of tuition increases at public institutions seems to be attributable to a decline in government support. However, the limitation of this argument is that it is unable to explain the dramatic increases in tuition rates experienced by public colleges and universities.

### **3. Government Intervention, Market Competition, Tuition Price Elasticity, and Rising Tuition**

In this section, we attempt to understand the above-mentioned dissimilar tuition growth rates from the perspectives of government intervention, market competition, and student tuition price elasticity. As mentioned above, activities that are heavily affected by government rules and subsidies, such as earning a college degree, are prone to be less efficient and more expensive than those that are not intervened by governments. Activities that are subject to competition are more in line with market discipline. Household furnishings and cellphone services, for example, have exhibited constant or even declining costs to consumers.

Perhaps, airline deregulation can offer some insights into the impact of government intervention on college tuition. Before 1978, the airlines played by Washington's rules. The government determined whether a new airline could fly to a certain city, charge a certain price, or



even exist. With controlled competition, airlines were guaranteed a profit. However, when Congress passed the Airline Deregulation Act of 1978, this deregulated passenger aviation fares and services. Commercial aviation was the first transportation mode in the US to be deregulated. Impacts rippled throughout the aviation industry, fares and rates decreased significantly, and load factors skyrocketed. Removing government from the business of regulating the skies has led to a remarkable collapse in airline prices. Airfares have fallen by about 50% since 1978. Where there is intense competition for a product that is price sensitive, prices will fall. However, if price competition is shielded or subsidized by government intervention, prices will rise. Indeed, the aforementioned studies by Cellini and Goldin (2014) and Lucca et al. (2017) indicate that the tuition difference between Title-IV-participating and -non-participating institutions was roughly equivalent to the average Pell Grant award, as well as that tuition does, in fact, change in response to increases in Pell Grants and student loan limits. Thus, the market for college education includes government intervention in the form of student financial aid, obscuring the true price of a college degree. Pell grants help nearly 7 million students afford college each year, and these financial-aid payments have risen by an extraordinary 11% per year. When a service is paid for by a third party, prospective students become less sensitive to price, which leads to subsidized tuition inflation. The above argument has considerable merit in terms of relating escalating tuition to government intervention, and it also brings student tuition price sensitivity into the following discussion.

Although government intervention in the form of student financial aid helps to explain escalating tuition to some extent, it cannot explain the discrepancies in the tuition growth rates experienced by the three types of colleges and universities. In particular, federal financial aid cannot explain the much lower tuition growth among for-profit colleges, because they are also Title-IV-participating institutions. We believe the solution to this puzzle lies in student tuition price elasticity. According to Bennett et al. (2010), the majority of students in for-profit schools finance their education through student loans. Not only are students at for-profit institutions the most likely to use student loans to finance their education, but the average student loan aid received per student is also the highest in the for-profit sector. During the 2006–07 academic year, nearly 61% of students at for-profit institutions received student loan aid, while 29% and 56% of students received loan aid at public and private non-profits, respectively. The authors suggest that this can be explained by the fact that the average student at a for-profit school is much less likely to receive institutional, state, or local grant aid than the typical student in the traditional sectors. This heavy reliance on loans inevitably increases students' sensitivity to price, which, based on economic principles, limits an institution's ability to increase tuition.

Furthermore, due to the lack of public funding in the form of state appropriations for their operations, for-profit institutions rely significantly on tuition revenue to recover the costs incurred by providing educational services. For this reason, among for-profit institutions, the business strategy tends to focus on offering degree programs with measurable skill outcomes in the hope of performing well regarding students' cost-benefit analysis. Lastly, the snippets of available evidence suggest that students attending for-profit schools ultimately earn less than students who attend other types of institutions, as well as that the change in their earnings after attending a for-profit school appears to be lower than or, at best, similar to the change in earnings that occurs after attending a non-profit or public institution. These observations collectively suggest that student tuition price elasticity in for-profit institutions is higher than in other types of institutions. To remain competitive in the marketplace, for-profit institutions must be very mindful of their tuition because their prospective students are more sensitive to price than non-profits.

#### **4. Summary and Discussion**

In this research project, we document a 73% increase in college tuition from the 1995–96 academic year to the 2019–20 academic year. There are several potential drivers of escalating tuition. Administrative, infrastructural, service, and regulatory costs are among the likely contributors to tuition increases. A single factor, in and of itself, is unlikely to account for rising tuition in a complex higher education system. We do not replicate the studies of others on the topic of tuition inflation. Instead, we attempt to further the understanding of rising tuition by adopting an overlooked perspective, that of market competition and student tuition price elasticity.

We observe a negative relationship between an institution's reliance on tuition revenue and government appropriations. Private non-profit and for-profit institutions rely much more heavily on tuition income than public colleges and universities. The tuition portion of public institutions' total revenue grows with declining government support. Nonetheless, public institutions have exhibited the fastest tuition growth over the past 20 academic years, while for-profit institutions saw the slowest increase during this same period.

Although the Bennett Hypothesis is defensible, the empirical evidence in this regard is mixed. We believe that the lack of consensus on the relationship between federal financial aid and rising tuition is due to the fact that most scholars have overlooked the true role of government intervention. We contend that government intervention in the form of federal student financial aid reduces student tuition price sensitivity in Title-IV-participating institutions, resulting in rising tuition. However, the influence government intervention on student tuition price elasticity is not uniform. Students at for-profit institutions have higher price elasticity than those at non-profits. Therefore, for-profit colleges and universities must be mindful of increasing tuition.

The current study suggests an important avenue for future research. There is no single variable that is solely responsible for escalating tuition. In an attempt to understand the phenomenon of rising tuition, it is crucial to consider the roles and interactions of multiple variables. Federal financial aid may have contributed to tuition inflation, but its impact is indirect in nature.

In light of the current study, we believe that one way to mitigate tuition inflation is to remove government intervention in an attempt to encourage price competition. The deregulation of the airline industry provides a good example of this. Similar to the airline industry prior to its deregulation, colleges and universities exhibit the kind of non-price competition through competing amenities. Academic institutions are protected from competing in terms of price via their ability to cover rising running costs by seeking additional taxpayer money, tapping endowment money, and engaging in fund-raising campaigns. Government intervention in the higher education marketplace in the form of student financial aid makes it easier for colleges to raise tuition for two reasons. First, colleges and universities believe that federal student subsidies will help cushion these increases. Second, federal student aid lowers student tuition price elasticity. Economics principles suggest that lower consumer price elasticity encourages colleges and universities to raise tuition.

Government intervention into the business environment of higher education has created limited competition. This is to the detriment of students because it results in higher tuition and unresponsive educational services, especially in terms of customer service. A shift from a business environment with government intervention to a largely unprotected, competitive marketplace may lead to a dramatic change within a short period. This change may include lower tuition, which will encourage college attendance and, in turn, benefit society as a whole.

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