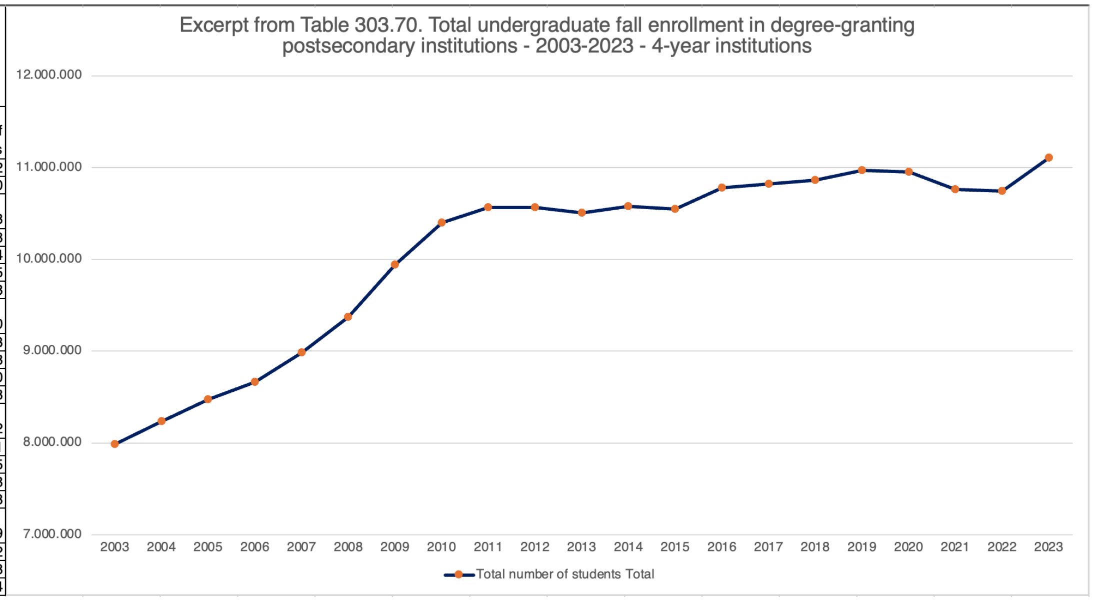
# Assignment 1

ECO 156 - Fall Term
09/19/2025
[redacted]

*Exercise 1:*
All the numbers were extracted from [Table 303.70] on the National Center for Education Statistics (NCES) website.

| Excerpt from Table 303.70. Total undergraduate fall enrollment in degree-granting postsecondary institutions - 2003-2023 - 4-year institutions | |
|---|---|
| Year | Total number of students |
| 2003 | 7.986.502 |
| 2004 | 8.235.060 |
| 2005 | 8.476.138 |
| 2006 | 8.666.288 |
| 2007 | 8.984.604 |
| 2008 | 9.373.645 |
| 2009 | 9.941.598 |
| 2010 | 10.398.830 |
| 2011 | 10.566.153 |
| 2012 | 10.567.798 |
| 2013 | 10.505.660 |
| 2014 | 10.579.458 |
| 2015 | 10.547.212 |
| 2016 | 10.782.231 |
| 2017 | 10.820.265 |
| 2018 | 10.863.408 |
| 2019 | 10.966.828 |
| 2020 | 10.952.879 |
| 2021 | 10.763.732 |
| 2022 | 10.741.498 |
| 2023 | 11.109.174 |

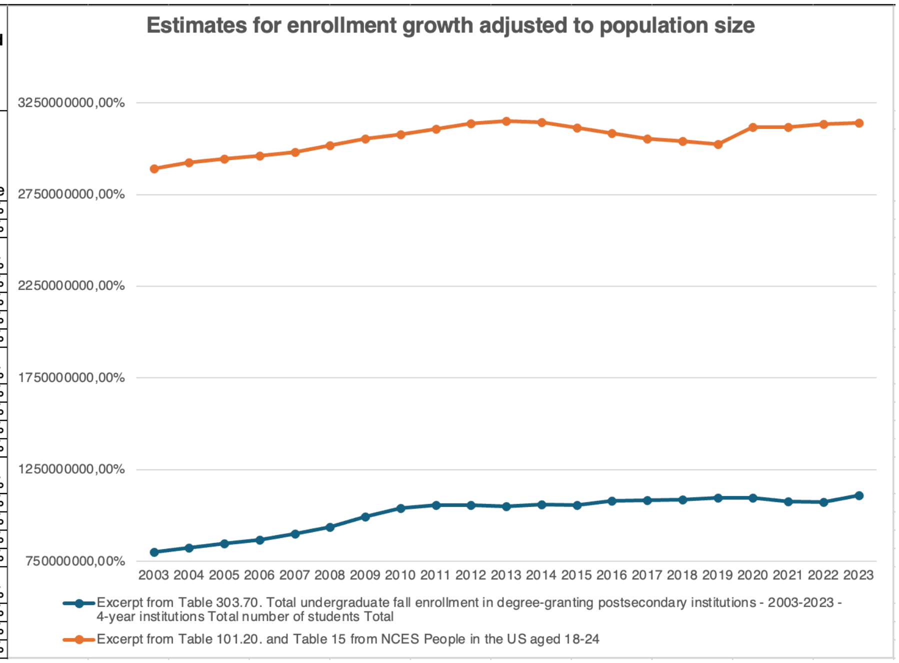



*Exercise 2:*
No, my initial estimates do not adjust for population size, but they can be adjusted using the following formula:

$$\frac{students\ enrolled\ in\ college/university}{people\ in\ the\ United\ States\ with\ ages\ between\ 18-24} \times 100$$

The new population numbers were extracted from Table 101.20 and Table 15 on the National Center for Education Statistics (NCES) website.

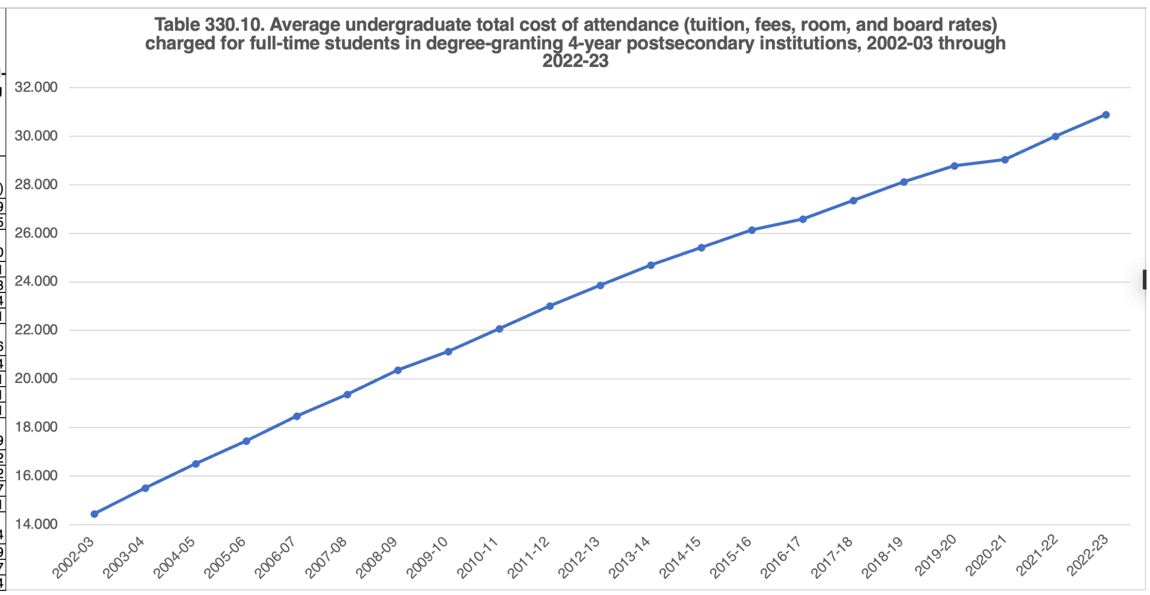
| Excerpt from Table 303.70. Total undergraduate fall enrollment in degree-granting postsecondary institutions - 2003-2023 - 4-year institutions | | Excerpt from Table 101.20. and Table 15 from NCES | Calculated using the formula above |
|---|---|---|---|
| Year | Total number of students | People in the US aged 18-24 | Percentage |
| 2003 | 7.986.502 | 28.924.000 | 27,61% |
| 2004 | 8.235.060 | 29.245.000 | 28,16% |
| 2005 | 8.476.138 | 29.442.000 | 28,79% |
| 2006 | 8.666.288 | 29.603.000 | 29,28% |
| 2007 | 8.984.604 | 29.808.000 | 30,14% |
| 2008 | 9.373.645 | 30.194.000 | 31,04% |
| 2009 | 9.941.598 | 30.530.000 | 32,56% |
| 2010 | 10.398.830 | 30.764.000 | 33,80% |
| 2011 | 10.566.153 | 31.087.000 | 33,99% |
| 2012 | 10.567.798 | 31.385.000 | 33,67% |
| 2013 | 10.505.660 | 31.506.000 | 33,34% |
| 2014 | 10.579.458 | 31.438.000 | 33,65% |
| 2015 | 10.547.212 | 31.156.000 | 33,85% |
| 2016 | 10.782.231 | 30.830.000 | 34,97% |
| 2017 | 10.820.265 | 30.544.000 | 35,43% |
| 2018 | 10.863.408 | 30.396.000 | 35,74% |
| 2019 | 10.966.828 | 30.235.000 | 36,27% |
| 2020 | 10.952.879 | 31.190.000 | 35,12% |
| 2021 | 10.763.732 | 31.178.000 | 34,52% |
| 2022 | 10.741.498 | 31.328.000 | 34,29% |
| 2023 | 11.109.174 | 31.398.000 | 35,38% |




*Exercise 3:*

All the numbers were extracted from [Table 330.10] on the National Center for Education Statistics (NCES) website.

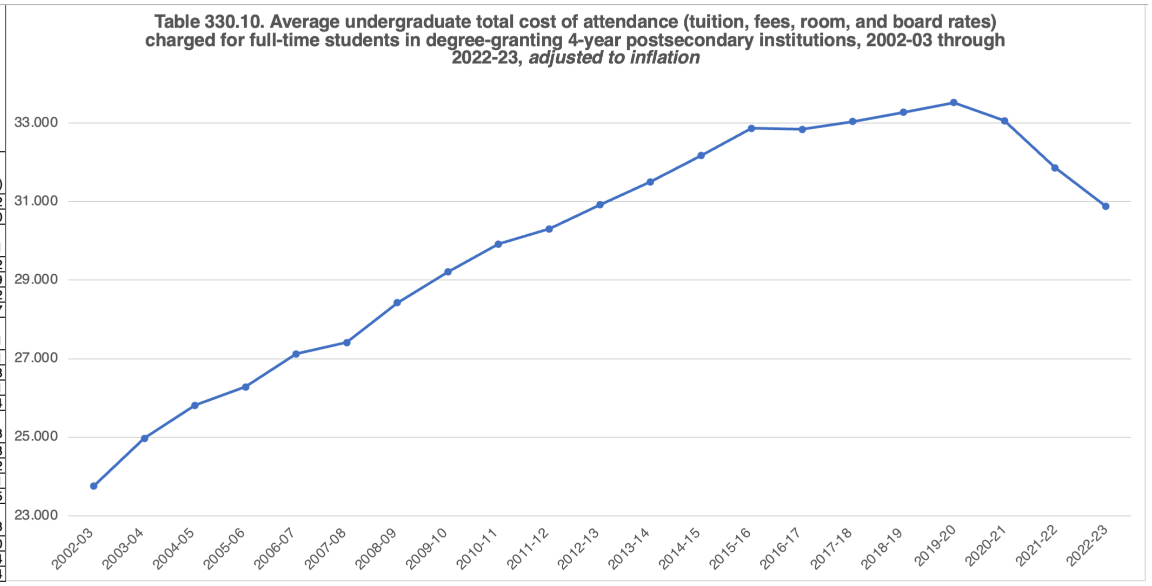
| Table 330.10. Average undergraduate total cost of attendance (tuition, fees, room, and board rates) charged for full-time students in degree-granting 4-year postsecondary institutions, 2002-03 through 2022-23 | |
|---|---|
| Academic Year | Total Cost (in $) |
| 2002-03 | 14.439 |
| 2003-04 | 15.505 |
| 2004-05 | 16.510 |
| 2005-06 | 17.451 |
| 2006-07 | 18.473 |
| 2007-08 | 19.364 |
| 2008-09 | 20.361 |
| 2009-10 | 21.126 |
| 2010-11 | 22.074 |
| 2011-12 | 23.011 |
| 2012-13 | 23.871 |
| 2013-14 | 24.701 |
| 2014-15 | 25.409 |
| 2015-16 | 26.132 |
| 2016-17 | 26.592 |
| 2017-18 | 27.357 |
| 2018-19 | 28.121 |
| 2019-20 | 28.774 |
| 2020-21 | 29.029 |
| 2021-22 | 29.987 |
| 2022-23 | 30.884 |




*Exercise 4:*

No, the initial graph is not adjusted to inflation. The one below is made from the same table from the National Center for Education Statistics (NCES), but uses the values in the Constant 2022-23 dollars based on the Consumer Price Index, prepared by the Bureau of Labor Statistics, U.S. Department of Labor, adjusted to an academic-year basis.

| **Table 330.10. Average undergraduate total cost of attendance (tuition, fees, room, and board rates) charged for full-time students in degree-granting 4-year postsecondary institutions, 2002-03 through 2022-23, *adjusted to inflation*** | |
|---|---|
| Academic Year | Total Cost (in $) |
| 2002-03 | 23.762 |
| 2003-04 | 24.970 |
| 2004-05 | 25.811 |
| 2005-06 | 26.282 |
| 2006-07 | 27.119 |
| 2007-08 | 27.412 |
| 2008-09 | 28.427 |
| 2009-10 | 29.211 |
| 2010-11 | 29.921 |
| 2011-12 | 30.303 |
| 2012-13 | 30.921 |
| 2013-14 | 31.504 |
| 2014-15 | 32.173 |
| 2015-16 | 32.868 |
| 2016-17 | 32.842 |
| 2017-18 | 33.041 |
| 2018-19 | 33.275 |
| 2019-20 | 33.523 |
| 2020-21 | 33.060 |
| 2021-22 | 31.864 |
| 2022-23 | 30.884 |




*Exercise 5:*

Usually, we assume that firms are profit-maximizing, but in this case, we use colleges as our provider and students as consumers. Most universities are not-for-profit, hence they won't always make the best financial choice.

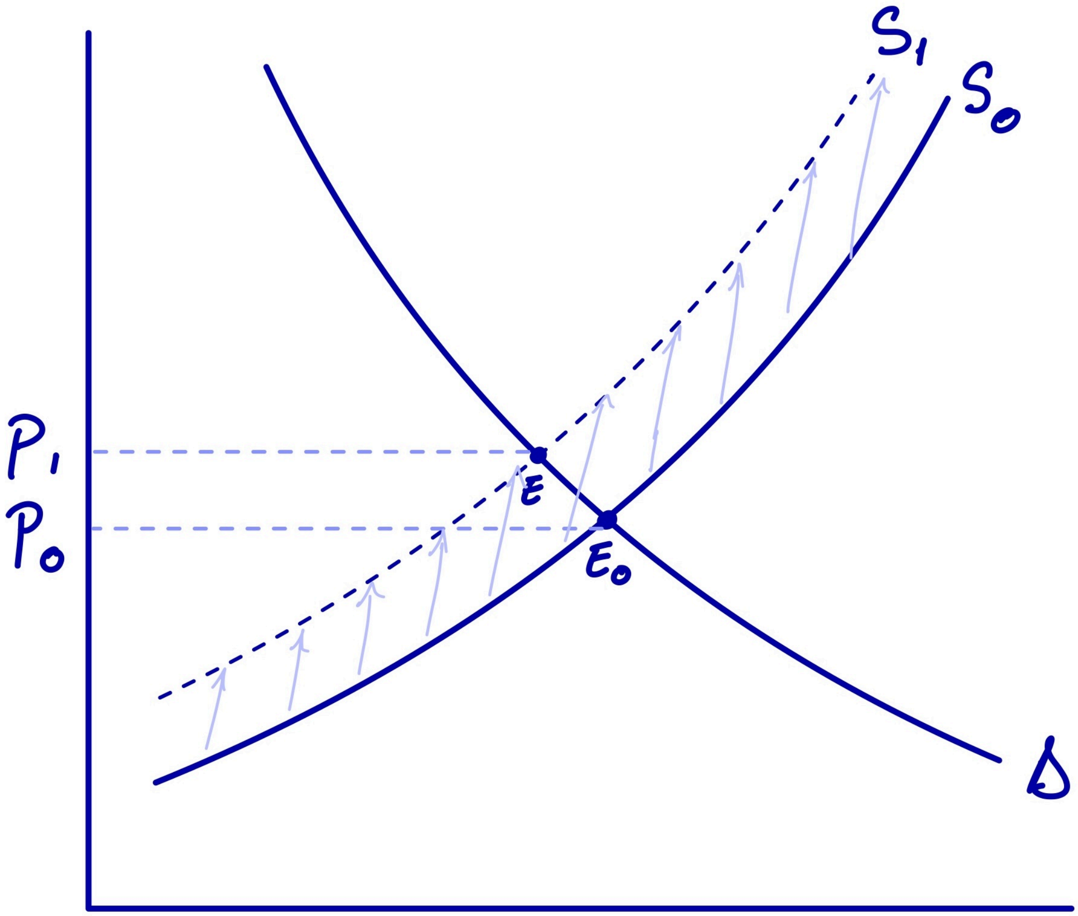
The basic law of demand states that as price increases, demand decreases, but that would not necessarily be the case for educational institutions. Demand might still increase, as a degree would bring several other benefits (job opportunities, academic fulfilment, etc.) that would outweigh the increased annual price.

*Exercise 6:*

Cost disease[1] is the persistent and upward pressure on costs in industries with little productivity growth (Baumol called them stagnant), driven by the need to match wage changes found in higher-productivity sectors.

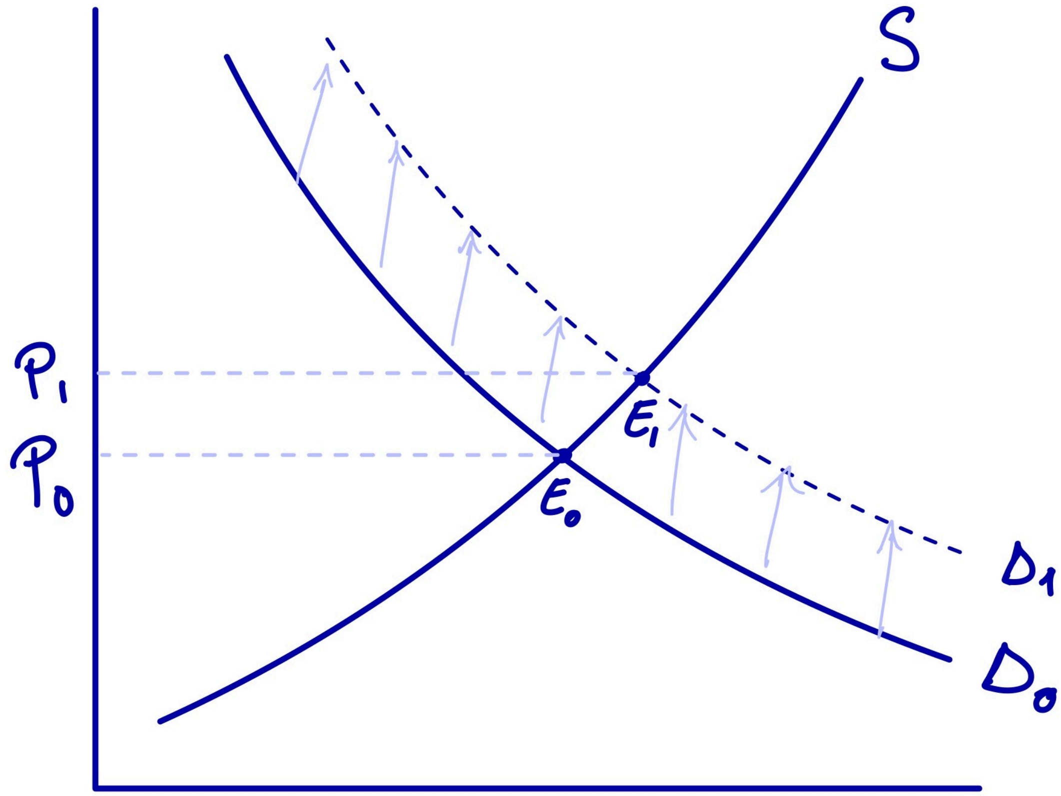
*Exercise 7:*

Ignoring the concerns from question #5, the demand is not going to change. Because of cost disease, the professors' wages must rise even though productivity hasn't grown much. This way, it becomes more expensive for an individual to attend college, hence institutions will supply less education. The supply curve will shift to the left, creating a new and higher equilibrium point.




*Exercise 8:*

According to the article, the average financial return rate for college is 12.5%. This high rate would attract more students, hence shifting the demand curve to the right. The increase in demand would lead to a higher equilibrium point, and, in the end, a higher cost of college.

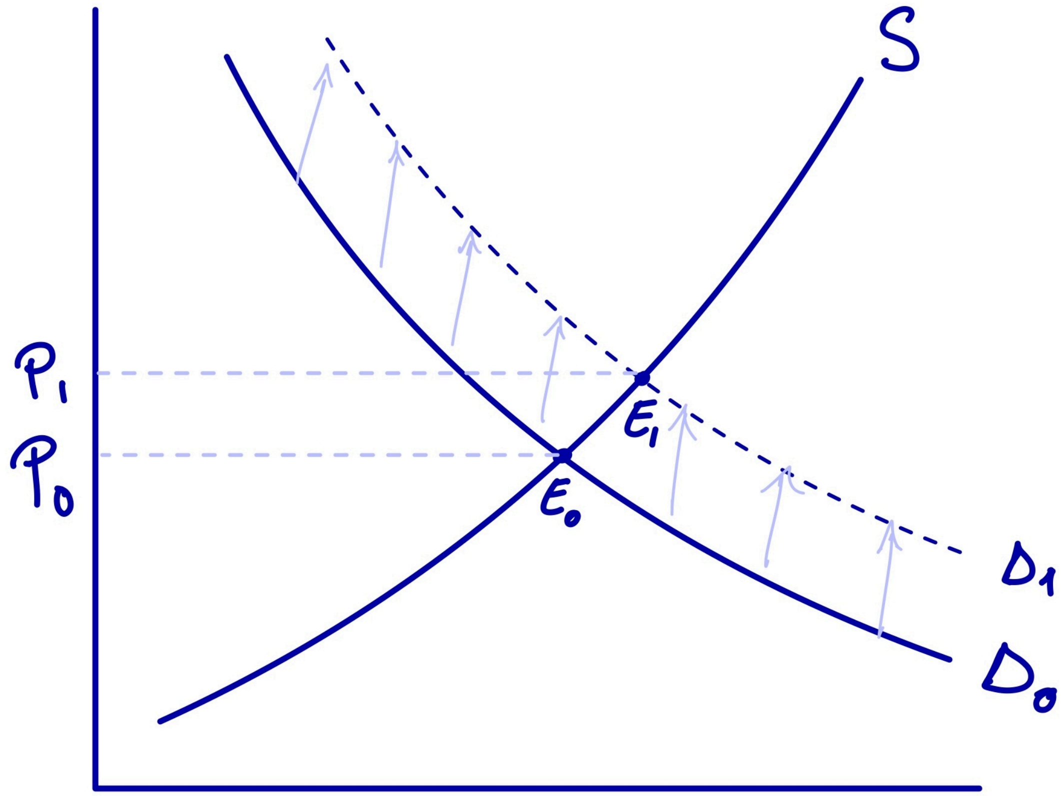



*Exercise 9:*

The Bennet Hypothesis[2] claims that an increase in federal government loans and grants allows colleges and universities to charge more (this way, students can afford a higher cost).

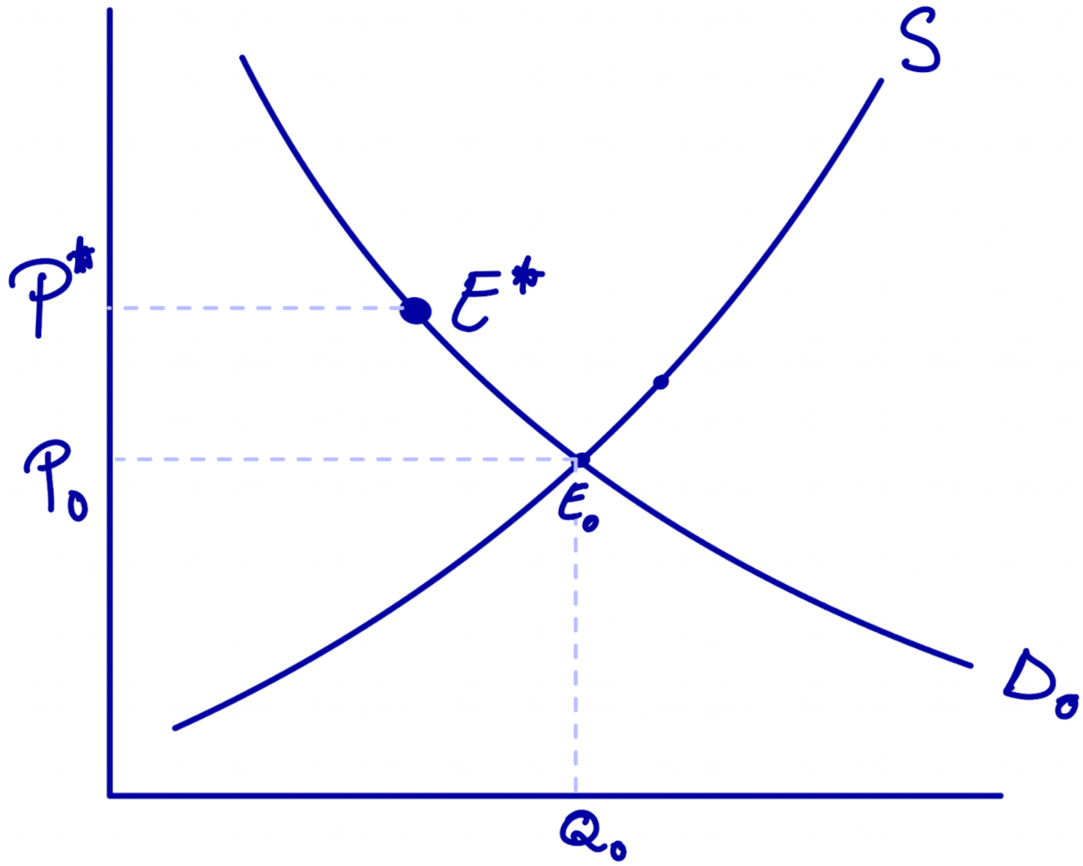
*Exercise 10:*

With the increase in federal funds, post-secondary education will become more accessible to students. This way, they will be incentivized to apply in larger numbers to college because they can now afford it. Supply won't change, but demand will increase (demand curve shifts to the right).




*Exercise 11:*

If a student applies to college during the Early Decision (ED) period, they have statistically more chances to get in. However, they sign a binding agreement that limits them to applying only to one college. The lawsuit in the Forbes article[3] was created because some universities illegally shared personal information about applicants who applied to multiple colleges in ED to collectively reject those applicants. This way, the postsecondary institutions acted as an oligopoly to artificially manipulate the supply and demand of the specific application pool. This way, the price shifts out of the equilibrium point (similar to how market failures work).




*Exercise 12:*
In short, because colleges expanded capacity while prices climbed, demand-based explanations seem more plausible. As analyzed in the problems above, it seems that more students want to go to college at any given price (sometimes because of grants and loans, while sometimes because of the practical investment return).

**BONUS:**
I found a working research paper co-authored by a senior economist at the Federal Reserve Bank of Richmond that focuses on the Bennet Hypothesis. In the article, it is estimated that between 46% to 57% of the total rise in annual net tuition is due to larger federal grants and loans. Moreover, the authors also theorize that higher returns in college degrees (better graduation rates, strong salaries, improved campus amenities, etc.) make college more attractive and add approximately 18% to tuition growth. These factors shift the demand curve to the right. [4]

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1. Nordhaus, William D. 2008. “Baumol’s Diseases: A Macroeconomic Perspective.” *The B.E. Journal of Macroeconomics* 8 (1). https://doi.org/10.2202/1935-1690.1382. ↩

2. Bennet, William J. “Our Greedy Colleges.” *The New York Times*, February 18, 1987. https://www.proquest.com/hnpnewyorktimes/historical-newspapers/our-greedy-colleges/docview/110825626/sem-2?accountid=8505. ↩
3. Nietzel, Michael T. 2025. “Lawsuit Filed against 32 Elite Colleges over Early Decision Admissions.” *Forbes*, August 10, 2025. https://www.forbes.com/sites/michaeltnietzel/2025/08/10/lawsuit-accuses-32-elite-colleges-of-early-decision-admissions-conspiracy. ↩
4. Gordon, Grey, and Aaron Hedlund. 2020. “Accounting for Tuition Increases across U.S. Colleges.” *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3720860. ↩