

Executive Summary

The Undergraduate Tuition Committee ("UTC") was tasked with reviewing the Maguire tuition data, reviewing the "cost of charging tuition" data (Admissions, Student Services, etc.) and also to study issues like "could ~~we~~ The Cooper Union keep the current 'funnel' size the same" (i.e. not pay \$6 per high school prospect, but increase yield to retain current student quality)? In addition the UTC collaborated with CDG ~~GDC~~, Cooper Union's consultants who provided mathematical models illustrating the financial impact of charging tuition. The UTC operated entirely independently of the "Graduate Tuition Committee" until the Committees had a joint meeting on November 8th that included Norm Lieu of CDG. Mr. Lieu ~~was asked to~~ combined the results of the two Committees in a single Excel model that would permit exploring the overall revenue consequences of pursuing various revenue sources (e.g., expanded master's programs, a post-baccalaureate pre-med program, undergraduate tuition) that might begin at different points in time. For example, starting expanded master's programs at the earliest possible time, and delaying the onset of undergraduate tuition until necessitated by under-performance of other revenue sources. This report focuses solely on the work of the Undergraduate Tuition Committee ~~undergraduate tuition model~~.

As a preliminary matter, the term "tuition" requires some explanation. Currently, The Cooper Union has a stated tuition of almost \$40,000 annually, but grants all of its students a 100% discount (a "full tuition scholarship"). Having a stated tuition, and then discounting it by 100% is done for a number of reasons, such as allowing ~~our~~ Cooper Union students to receive TAP grants, which would not be available to an institution that had claimed it was "tuition-free". In the event that undergraduate tuition is adopted, The Cooper Union's stated tuition will remain the same, however ~~we~~ it will give a discount smaller than 100%. For example, if ~~our~~ The Cooper Union's stated tuition is \$40,000 and ~~we~~ it lowers the discount rate to 80%, students and their families would be required to contribute \$8,000 annually to the cost of the student's Cooper education.

The members of the UTC have concluded that a low undergraduate tuition (e.g., initially ~\$9600/yr) holds the prospect of a minimal and reversible impact on the academic quality of future classes and on the institution's reputation, while still achieving the School of Engineering's five year revenue target if implementation costs are kept to a bare minimum. Furthermore, in the event that more risk-laden revenue generation efforts underperform, progressive increments in undergraduate tuition might be applied by The Cooper Union to cover the bulk of the ten year target.

Initially, the UTC was told that the institutional cost of charging tuition was approximately \$3M annually. This figure was provided to ~~us~~ the UTC by our Vice President of Finance and

Administration, and was based on information supplied by the Dean of Students and the Dean of Admissions as well as ~~This figure was based on~~ the assumption that tuition would be charged to students from all three schools, not just the School of Engineering. It was also assumed that tuition would be charged at "market rate" (approximately \$40,000) which would lead students and their parents to assume that certain amenities and services would be provided on campus (e.g., a full time psychologist, additional career counselors and financial aid counselors). Further, this figure relied on the statistical results from the Maguire Report combined with the assumption that, in the event that tuition was charged, the School of Engineering would go to great lengths to insure there would be no significant change in the profile of our incoming students (e.g., average math SAT score). Therefore, these figures assumed that ~~we~~ The Cooper Union would purchase large numbers of 'student leads,' spend substantial sums on various forms of advertising, and greatly expand the size of the Office of Student Services. ~~Finally~~ Consequently, the \$3 million figure was something of a "worst case" scenario.

The UTC met with Deans Lipton and Lemiesz, Vice President Westcott, and Mary Ruokonen (Financial Aid Coordinator within the Registrar's Office), reviewed the Maguire report, consulted with institutions that had made the transition from tuition-free to charging tuition, and engaged in internal discussion.

The results of ~~our~~ CDG's analysis are found at the end of our report (pages 6-7) as 4 Figures.

Figure 1 employs a model that locks tuition at a fixed dollar amount (here, \$9,600, or a 76% discount rate) for each of an undergraduate student's four years at The Cooper Union. The next entering class will also face a locked tuition, but at a rate that has grown by inflation, assumed to be 3%. This allows The Cooper Union ~~us~~, if relying solely on undergraduate tuition, to nearly meet the School of Engineering's ~~our~~ 5 year target, but not ~~our~~ its 8-10 year target. The dashed target line represents the growth of ~~our~~ the School of Engineering's target due to inflation.

Figure 2 employs a model in which there are inflationary increases both in annual tuition for a given student, as well as for each new entering class. This change brings the School of Engineering ~~us~~ slightly closer to meeting ~~our~~ its 5 year target, but not ~~our~~ its 8-10 year target.

Figure 3 employs a model similar to Figure 1, in that tuition for a given student is locked for 4 years and each new class sees an increase coupled to inflation. Additionally, the discount rate gradually ~~drops~~ reduces from 76% to 60%. ~~We~~ Here the School of Engineering comes closer to meeting ~~our~~ its 8-10 year target.

Figure 4 employs a model similar to Figure 2, but adding the gradual ~~drop~~ reduction in discount rate. The School of Engineering ~~We~~ comes somewhat closer to reaching its ~~our~~ 8-10 year target.

Undergraduate Tuition Committee Report

1. Other highly regarded engineering schools (e.g., Rice, Olin) have managed to survive the transition from being tuition-free (a 100% discount rate) to charging undergraduate tuition (e.g. a 50% discount rate) without a loss of reputation or a reduction in student quality (beyond a possible temporary decline).¹
2. We reject the Maguire report's characterization of Cooper Union as an institution that is perceived to be of high value, but not perceived to be of excellent quality, which might merit going to extraordinary lengths to insure no loss of student quality.
3. Even in the event of a moderate decline in such metrics as average math SAT score, we reject the assumption that we cannot remain an excellent school of engineering.
4. Any expected decline in student quality would be strongly coupled to ~~our~~ The Cooper Union's discount rate. It is therefore critical to reduce the institutional cost associated with charging tuition. After discussion with the VP of Finance and Administration and the Deans of Admissions and Student Services they reduced this predicted institutional cost from \$3 million annually to \$650,000 annually.
5. With this reduction in the cost of charging tuition, the School of Engineering may meet its five year revenue target by the end of the five year period, solely by changing the discount rate from 100% to 76% (students and their families would be expected to contribute \$9,600). That is, the School of Engineering's ~~target could~~ target ~~could~~ may be met without pursuing any additional revenue generation methods, such as tuition-based summer programs or graduate programs. This conclusion was ~~supported by~~ based on a model developed by Norm Lieu of CDG, which included such factors as inflation and attrition.
6. In the event of underperformance of other revenue generation efforts, in academic year 2017-18 The Cooper Union could begin to gradually change the above described model to meet the 10 year target of \$6 million/yr for the School of Engineering. These adjustments might include an enlargement of incoming freshman classes, a more aggressive effort to replace students lost to attrition through acceptance of greater numbers of transfer students, and a progressive retreat in the discount rate provided on the school's stated tuition. In this "worst case" scenario the discount

¹ It should be noted that neither institution is directly comparable to The Cooper Union. For example, Olin is a young institution (it admitted its first full class in 2002) and Rice is a much larger institution than Cooper, and introduced tuition in a different era, when issues such as desegregation in the South were at the forefront.

would need to be reduced to about 60% by academic year 2022-23. Since The Cooper Union's nominal tuition is projected by CDG to inflate to over \$50,000 by that time, the contribution from students and their families would exceed \$20,000 in 2018 dollars.

7. At an initial discount rate of 76% the "effective tuition cost" of \$9,600 annually is substantially below that of most engineering schools that ~~we would consider~~ may be considered to be our 'competition.' The only local school with a lower cost ~~than Cooper Union would be~~ is CUNY at \$5,430 for in-state residents.

8. While there may be a substantial psychological shock to the reduction of the discount rate from 100%, Cooper Union currently has student fees and there is a substantial cost involved in living in NYC (the average Cooper student spends between \$15,000 and \$20,000 to live within commuting distance of school). The real comparison, for students and their parents, is the total cost of attending a particular engineering school. On this basis, the School of Engineering may remain competitive with a 76% discount rate.

9. Charging undergraduate tuition is the most likely method to succeed in meeting ~~our~~ the School of Engineering's five year target. Some alternative approaches, such as creating new graduate programs (for which tuition will be charged) are, in the short term, too uncertain to rely on, and may require substantial investments of time and money, etc. In the long term, the success of alternative revenue generation sources may enable ~~us~~ The Cooper Union to increase the discount rate.

10. A topic of discussion relating to tuition is that it may be seen as inappropriate to charge it in the School of Engineering, but not in the Schools of Art or Architecture. (It is unknown at this time what methods of revenue generation will be used in these schools.) The UTC notes that employment opportunities and starting salaries for engineering graduates are greater than those for graduates from the other schools. If an engineering student is required to take out loans in order to pay their tuition, they are more likely to have an income after graduation that will allow them to repay their loans.

11. Many of our students do not currently fill out FAFSA forms. ~~We~~ The School of Engineering therefore has ~~have~~ incomplete information on the ability of many our students to pay tuition at \$10,000 annually. ~~We~~ The UTC ~~have~~ inquired about requiring the next entering class to fill out FAFSA's, solely for the purpose of gathering information, but this is not permitted, according to Dean Lipton, since it will not be tied to an actual grant.

12. ~~Our~~ The Cooper Union's Tax Equivalency status with NYC is not threatened by a reduction in the discount rate, according to Vice President Westcott, who conferred with counsel and the NYS Attorney General.

13. A remaining issue the UTC considered is that the revenue generated by reducing the discount rate may be reduced if The Cooper Union continues with ~~our~~ its current "need-blind" admission policy rather than converting to a "need-sensitive" admission policy. Vice President Westcott suggested that public perception of the school would preclude such a change. ~~Our~~ CDG's model met ~~our~~ the School of Engineering's five year target with an initial undergraduate enrollment of 100 students. The model assumed decreasing attrition rates each year (e.g., 15% attrition between freshman and sophomore year, 10% attrition between sophomore and junior year), which to some extent would be mitigated by accepting a number of transfer students. But the UTC strongly suggests admitting at least 10 additional students per year with a 100% discount rate to insure that The School of Engineering would have a reasonable number of particularly strong students in each class.

14. Some have expressed a concern that reducing the discount rate of the engineering program will deprive some of the neediest of an engineering education. This concern is strongest when the neediest may also be minority candidates. We note that strong minority candidates for engineering ~~will receive much better~~ may receive good financial packages from a number of excellent engineering programs – in addition to full-tuition scholarships they may receive room and board. In any event, Cooper Union's financial aid packages, including its ~~our~~ own outright grants will prove adequate for many at this low tuition point.

Mary Ruokonen (Director of Financial Aid) notes: "The following chart lists the maximum federal and state financial aid available for the very poorest first year students, if the discount rate is reduced. These are current funding levels and are subject to changes in federal and state appropriations:

Federal Pell Grant	\$5,550
Federal Supplemental Opportunity Grant	\$4,000
Federal Subsidized Stafford Loan	\$3,500
Federal Unsubsidized Stafford Loan	\$2,000
New York State Tuition Assistance Program	\$5,000
TOTAL	\$20,050

Parents with good credit scores can obtain a Federal Parent Loan for Undergraduate Students (PLUS Loan) up to the remaining cost of attendance."

15. ~~Our projections have been developed in isolation from the Graduate Tuition Committee, however their report notes that "The proposal does NOT reduce the size of the population of undergraduate students." In any event, we believe a "critical mass" of students are required within each major, so would oppose a reduction of the number of undergraduates, regardless of which revenue plans may be put into effect.~~

The UTC does not endorse reducing the size of the undergraduate programs. Having too few students in any of the four majors would reduce the below "critical mass" in terms of offering a variety of attractive electives, "populating" special projects and research activities, and supporting faculty development. Therefore, all analyses here and in the programs proposed by the GTC presume retaining no fewer than 100 undergraduates per year (plus potentially an additional 10 with a 100% discount rate, as stated above).

16. In the event that the discount rate is reduced, ~~the UTC suggests that~~ an additional overload fee could be charged, per credit, if a student registers for more than 19 credits in any semester or exceeds the number of credits required for graduation.

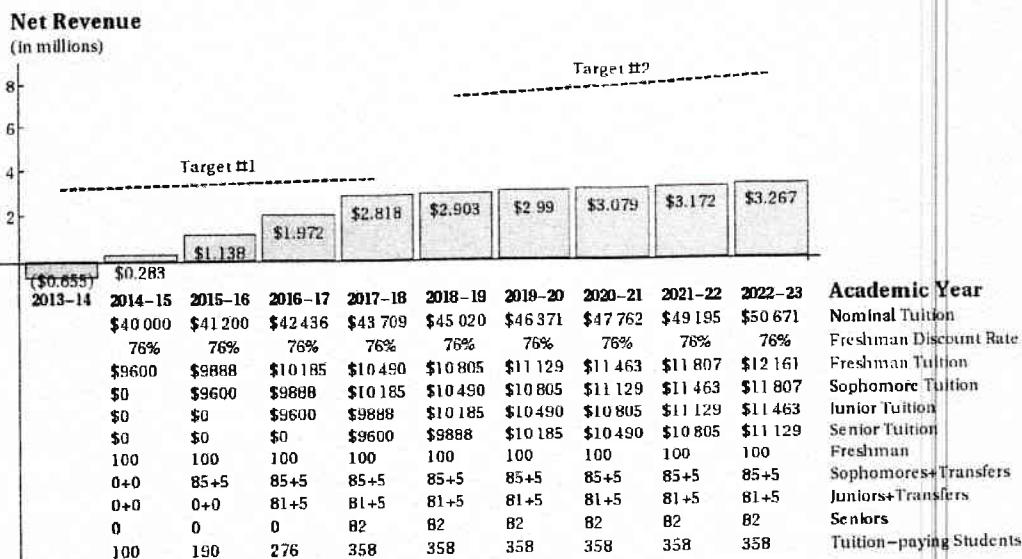
17. The UTC notes that planned increases in the Admissions budget provide for new recruitment activities which include more active recruitment of international students. We believe that it is reasonable to expect that Cooper can gradually attract more talented students from abroad who can enrich our community and themselves benefit from our programs.

18. The results of ~~our~~ CDG's models follow. They include such effects as attrition, inflation, transfer students.

Four Models to meet 5 year / 8-10 year Revenue Targets

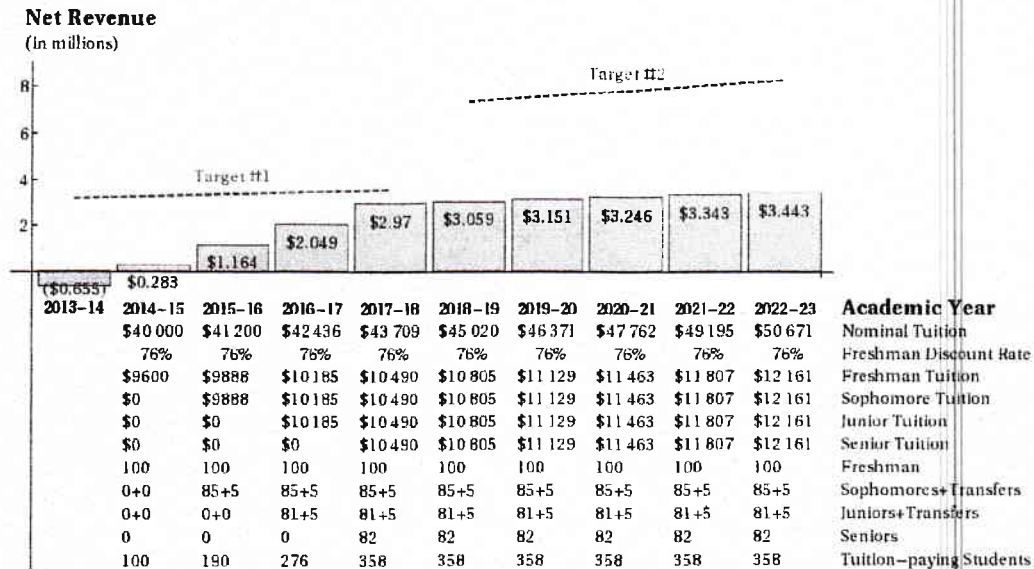
Model 1: Tuition Lock

A given student pays the same annual tuition for 4 years. Each new class sees an increase coupled to inflation.



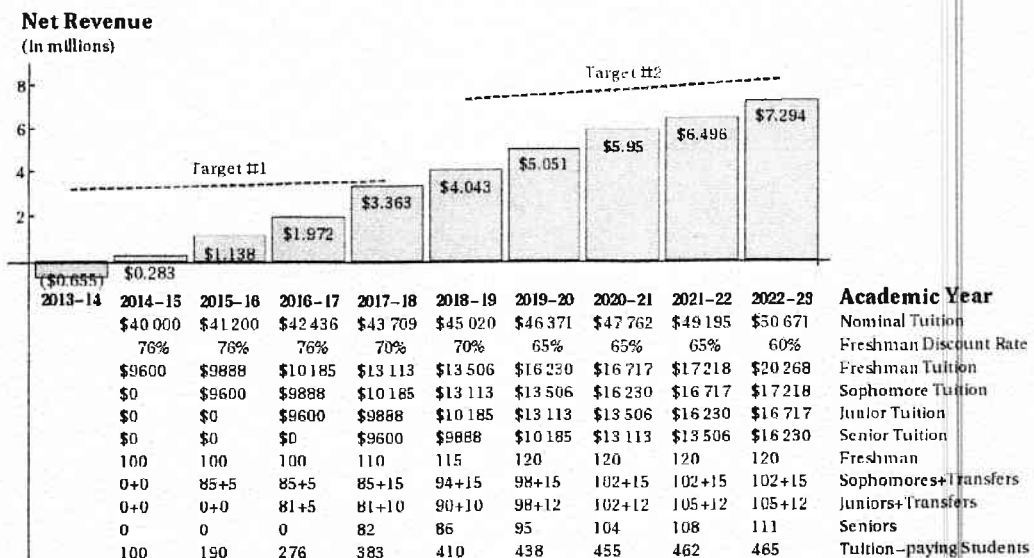
Model 2: Discount Lock

Tuition increases each year coupled to inflation for existing students and new classes.



Model 3: Tuition Lock/Discount rate gradually decreases

A given student pays the same annual tuition for 4 years. Each new class sees an increase coupled to inflation. Additionally, the discount rate gradually drops from 76% to 60%.



Model 4: Discount Lock/Discount rate gradually decreases

Tuition increases each year coupled to inflation for existing students and new classes. Additionally, the discount rate gradually drops to 60%.

