ANALYSIS IN BRIEF

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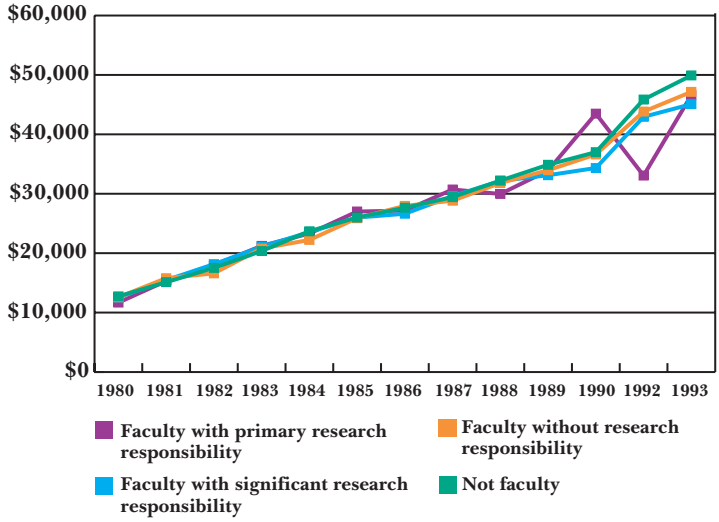
An Analysis of the Relationship between Medical Students' Educational Indebtedness and their Careers in Research

A shortage of physician scientists threatens our nation's ability to translate basic research into new patient-care applications. Educational indebtedness is widely believed to be a major barrier for medical students to pursue research careers. Although intuitively appealing, this perception has not been tested using quantitative data.

This *Analysis in Brief* describes the relationship between educational indebtedness and careers in research by investigating whether educational debt is proportionally and negatively associated with faculty research appointments, and whether educational debt is a significant predictor of research careers. Because educational debt may only affect research career choices when the level of debt reaches a certain threshold, this study also examines whether high educational debt especially discourages research career choices. For this study, I selected all medical students who graduated between 1980 and 1993 and tracked them until 2001 – a minimum of eight years to allow for identification of a faculty appointment. However, the 1991 graduates are excluded because data on total educational debt are not available for them. Graduates who participated in M.D./Ph.D. programs are also excluded since these individuals received substantial financial support during their medical school years.

Of the 201,688 graduates from 1980-93 identified for this study, one percent had accepted faculty appointments with *primary* research responsibility. Nine percent of these graduates had accepted faculty appointments with *significant* research responsibility (defined as having at least 10 percent of time in research but not a primary responsibility), while another nine percent had accepted faculty appointments with no or insignificant research responsibility. (The latter group also includes faculty whose research information is unknown.) Eighty one percent of these medical school graduates did not have faculty appointments.

Figure 1
Average Level of Educational Debt, Medical School Graduates from 1980-93, by Faculty Category

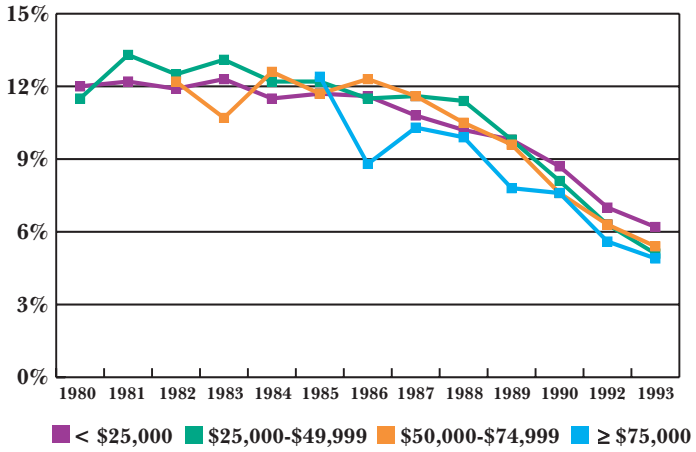


Data Sources: AAMC Student Record System, Graduation Questionnaire, and Faculty Roster System.

Note: The 1991 data are excluded from the analysis because data on total educational debt are not available.

Figure 1 shows the average level of educational debt for the medical school graduates from 1980-93 who held faculty positions with differing research responsibilities and those who did not hold faculty positions. The levels of educational debt among these various groups are very similar. A T-test analysis confirms that the difference in mean level of debt between graduates who had faculty appointments with research responsibilities and graduates who had no faculty appointments is not statistically significant for almost all cohorts. The mean level of debt is significantly different at the $p<0.01$ level only for graduates holding faculty appointments with primary research responsibility in the 1992 cohort and with significant research responsibility in the 1993 cohort, compared to graduates in the same cohorts who did not become faculty.

Figure 2
Percentage of Medical School Graduates from 1980-93 Who Became Research Faculty, by Debt Category



Data Sources: AAMC Student Record System, Graduation Questionnaire, and Faculty Roster System.

Notes: The 1991 data are excluded from the analysis because data on total educational debt are not available.

Graduates from 1980-84 who are in high debt categories are excluded since their numbers are too small.

I also conducted a logistic regression analysis for each of the 1980-93 cohorts on the likelihood of becoming faculty with primary or significant research responsibility, using educational debt as the only predictor in the regression models. The level of debt (measured in $1,000 units) is only a significant predictor for the 1992 graduation cohort (p=0.01) and the 1993 cohort (p<0.01). However, the magnitude of the odds ratios (0.997 for both cohorts) is too small to be meaningful: for every $1,000-increase in educational debt, the odds of becoming a faculty member with research responsibility versus not becoming such a faculty member only decreases 0.3 percent.

To find out whether educational debt only affects research careers of medical students with high levels of debt, I grouped each of the 1980-93 graduate cohorts into five debt categories: (1) less than $25,000, (2) $25,000-$49,999, (3) $50,000-$74,999, (4) $75,000 or more, and (5) debt information unknown. The likelihood of becoming faculty with primary or significant research responsibilities is quite similar between graduates with high and low levels of debt, and this pattern is consistent across all graduation cohorts studied. Figure 2 illustrates the findings among the 1980-93 medical school graduates.

To further determine whether educational debt only affects research careers for medical students with high levels of debt, I conducted a logistic regression analysis for each of the 1980-93 cohorts on the likelihood of becoming a faculty member with primary or significant research responsibility using the same categories of indebtedness as predictors. In each cohort, individuals with higher levels of debt are not significantly (at $p < 0.01$ level) less likely to have research faculty appointments than individuals of the same cohort who had debt less than $25,000.

A number of factors, including length of clinical training, lack of mentoring, educational debt, difficulty in securing research grants, and uncertainty about promotion, have been cited as problems contributing to the shortage of physician scientists. However, not all the assertions have been empirically examined. Although this study found a notable decline in the percentage of graduates pursuing research faculty positions since the late 1980s,* it did not find a significant negative association between educational indebtedness and the pursuit of research careers among medical school graduates from 1980-93. Therefore, these findings suggest that the impact of educational debt on the decisions of graduating medical students to pursue research careers may not be as significant as it is commonly perceived.

This study has limitations. Medical educational debt has been substantially higher in recent years than it was a decade ago, even after adjustment for inflation. The growing educational indebtedness among recent graduation cohorts may affect their career decisions differently, and the findings of this study may be less relevant to those graduates. More studies are needed to examine further the hypothesized relationship and to confirm the findings of this study. Studies are also needed to address the relationship between debt burden and retention of research faculty and the association between consumer debt and research careers.

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* Data collection and reporting factors may also contribute to this decline.