Medical School Financing and Research

Problems and Policy Options

R. Glenn Hubbard

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Consider my following observations. "The industry is in the midst of a profound change in financing and operation. Moreover, the industry's historical patterns of financial cross-subsidies have generated competitive problems and inefficiencies. Deregulation has exposed some sectors to competition, leading to fears that funds will not be available to support universal access. Likewise, fears abound that the competitive process is discouraging externality investments."

I address those concerns in this monograph in the context of academic medical centers. My above observations, however, actually referred to the telecommunications industry, in which cross-subsidies between local exchange service and long-distance service historically generated significant economic distortions. Some analysts have voiced the concern that deregulation of the telecommunications industry and the weakening of cross-subsidies would hinder telephone network development and access. I could also reach much deeper into American industries for similar examples—including commercial banking, transportation, and even academia. In a number of industries, explicit and implicit regulation has created cross-subsidies; shifts in those cross-subsidies can have wide-ranging implications for industry organization and structure.

The American public has traditionally considered academic medical centers to be eminent and valuable gen-

erators of research and producers of medical care within the U.S. health care system. At least four missions figure prominently in the image of academic medical centers:

- basic and clinical medical research
- medical education and training
- cutting-edge care for patients with complicated illnesses
- treatment of those who cannot pay for care

Fulfilling those missions has brought significant community support for academic medical centers, and the centers have enjoyed success (relative to non-health-related areas) in obtaining federal research support.

While the missions just described may seem distinct, their financing is not. Medical school financing—by no means unique among university financing—contains a patchwork quilt of cross-subsidies. In particular, faculty practice plans provide support for academic medical centers through the revenues they generate. Such support may be explicit (for example, compensation of faculty and residents) or implicit (for example, through "dean's tax" assessments).

The competitive position of faculty practice plans in markets for patient care affects the income of those plans. To the extent that market penetration by health maintenance organizations (HMOs) reduces prices of medical services, revenues of faculty practice plans may fall. That decline in revenue may, in turn, reduce discretionary funds within the academic medical center that are available to subsidize research or uncompensated care.[1] Such a scenario raises three questions for analysis. First, how exactly do faculty practice plans fit within the operations of academic medical centers? Second, is it reasonable to assume that potential declines in the revenues of faculty practice plans will squeeze funding for other missions of the medical center? Finally, if such a squeeze is likely, what response, if any, should we expect from federal government support of academic medical centers?

This monograph is organized as follows. In the section on financing academic medical centers, I place current shifts in the financing in a historical context and consider whether declines or prospective declines in discretionary funds supplied by faculty practice plans are occurring or are likely to occur. The following section considers the question of how one would determine whether financing shifts adversely affect research activities of academic medical centers. Establishing "the problem" is likely to be more difficult than one might imagine at first blush. In the next section I assess recent proposals for higher guaranteed public support, especially through dedicated trust funds, for academic medical centers. The final section summarizes my analysis.

The Financing of Academic Medical Centers

At the risk of oversimplifying, we can think of an academic medical center as a collection of related institutions, including a medical school, affiliated hospitals and outpatient centers, an affiliated faculty practice plan, and other units.

Overview. The organization of faculty practice plans varies across academic medical centers; plans may be part of the university, separate not-for-profit organizations, or independent professional corporations.[2] In addition to compensation for faculty, plans generally pay a portion of clinical revenues to the medical school as a "dean's tax"—assessed, for example, on gross revenue or net revenue.[3] The faculty practice plan may also pay part of the administrative costs of the affiliated hospital.

While faculty practice plans are the subject of the

present analysis, they are by no means the only sources of funds available to cross-subsidize activities. Other examples include Medicare's direct graduate medical education payments (in principle, to compensate hospitals for Medicare's share of direct training costs) and indirect medical education payments (in principle, to compensate teaching hospitals for their relatively high costs). State and local governments may award funds to academic medical centers to subsidize medical education and indigent care. Finally, royalties, endowment income, and university transfers are potential sources of funds for cross-subsidization.

Academic medical centers have experienced significant growth in the decades after 1960. In the 1995–1996 academic year, there were 125 medical schools,[4] with total revenues of $31.9 billion. Those enterprises housed 92,267 full-time faculty members, 66,906 medical students, 22,198 graduate students, and 74,141 residents and fellows supervised by medical school faculty. By contrast, in the 1960–1961 academic year, eighty-six medical schools garnered $436 million in total revenues (or $2,037 million in 1996 dollars) and used 11,224 full-time faculty members to supervise 30,288 medical students, 3,253 graduate students, and 15,484 residents and fellows.

Each of those measures of size has experienced virtually continuous growth over the post-1960 period, with the exception of medical student enrollment, which has changed very little since 1980. Faculty ranks have swollen, largely because of the growth in the number of clinical faculty, as opposed to faculty providing education in basic sciences, such as anatomy or biochemistry. As table 1 shows, growth in federal research support since 1960 has been strong in constant dollars, although support has accounted for a progressively smaller share of medical school revenues over the period. In terms of revenue growth, the most rapid growth for both public medical schools and private medical schools has been in the revenues of faculty practice plans and in payments from hospitals.[5,6] As table 2 shows, in the

TABLE 1

HISTORICAL TRENDS IN REVENUES FOR PROGRAMS OF U.S. MEDICAL SCHOOLS, 1960–1996

(figures in millions of 1996 $)

Academic Year	Federal Research (direct)		Other Federal Nonservice (including indirect)		State and Local Government Nonservice		Tuition and Fees		Medical Service[a]		Other[b]		Total	
	$	%	$	%	$	%	$	%	$	%	$	%	$	%
1960–61	621	31	201	10	346	17	131	6	131	6	607	30	2,037	100
1965–66	1,501	40	506	13	583	15	176	5	210	6	806	21	3,782	100
1970–71	1,504	26	1,106	19	1,109	19	216	4	718	12	1,229	21	5,880	100
1975–76	2,034	24	983	12	1,997	24	385	5	1,505	18	1,470	18	8,374	100
1980–81	2,479	23	882	8	2,506	23	580	5	2,883	27	1,476	14	10,806	100
1985–86	3,134	21	639	4	3,079	20	859	6	5,159	34	2,303	15	15,173	100
1990–91	4,575	19	616	3	3,349	14	992	4	10,654	45	3,589	15	23,775	100
1995–96	5,799	18	602	2	3,406	11	1,300	4	16,198	51	4,508	14	31,873	100

a. "Medical service" includes faculty practice plan revenues and payments from hospitals.

b. "Other" includes endowment income, parent university support, gifts, and miscellaneous sources.

SOURCES: Tabulations from Association of American Medical Colleges, Liaison Committee on Medical Education Questionnaire, Part I-A, Section for Operational Studies, Institutional Data Systems, updated November 1997. Figures are converted to constant 1996 dollars by using the GDP deflator.

most recent three academic years for which data are available, revenues of faculty practice plans per se account for about one-third on average of medical center revenues.

Trends in Income of Faculty Practice Plans. While academic medical centers in principle have many sources of discretionary funds that they could use to support research or other missions, in practice, revenues of faculty practice plans play a very prominent role. Tuition and fees, for example, accounted for only 4.1 percent of medical school revenues in the 1995–1996 academic year (see table 2). Gifts and endowment income, accounting for 3.9 percent of revenues in the 1995–1996 academic year, are often restricted to research on specific diseases or to support of specific individual faculty members' work. Indirect cost recovery accounts for 6.3 percent of revenues and is fungible. The revenues of faculty practice plans (33.4 percent of total revenues)—associated with patient care activities of medical school facilities—can support other missions through the dean's tax after expenses have been covered. Moreover, since the 1985–1986 academic year, revenues of faculty practice plans have grown significantly faster than any other source of revenue (with the exception of gifts, the growth in which is on a much smaller base).[7]

The Association of American Medical Colleges recently studied the extent of clinical support for academic programs provided by faculty practice plans (Jones and Sanderson 1996). Of faculty practice plan revenues of $8.3 billion during the 1992–1993 academic year, 28 percent, or about $2.4 billion, was used to subsidize other activities of academic medical centers, including $816 million for research, $702 million for undergraduate medical education, $594 million for graduate medical education, and $244 million for other activities. In addition to transfers through the dean's tax, the faculty practice plans subsidize the research and teaching of clinical faculty by paying all their compensation, whereas a faculty member may spend 1.5

TABLE 2
RECENTS TRENDS IN REVENUES FOR PROGRAMS OF U.S. MEDICAL SCHOOLS
(percent)

	Academic Year		
Revenues	1993–1994	1994–1995	1995–1996
Grants and contracts	30.6	30.5	29.7
Federal	18.9	18.6	18.2
direct	13.6	13.4	13.1
indirect	5.3	5.2	5.1
Other	11.7	11.9	11.5
direct	10.6	10.7	10.3
indirect	1.2	1.2	1.2
Other federal appropriations	0.4	0.4	0.3
State and local government appropriations	10.0	9.6	9.3
Tuition and fees	4.1	4.1	4.1
Faculty practice plans	33.1	33.2	33.4
Hospital medical school programs	13.4	13.7	15.0
Endowment income	1.6	1.6	1.6
Gifts	2.1	2.1	2.3
Parent university support	0.8	0.9	0.8
Miscellaneous sources	3.8	3.8	3.6
Total revenues	100.0	100.0	100.0

SOURCES: Ganem and Krakower (1997, table 2). The table was prepared by the Association of American Medical Colleges from data from the Annual Financial Questionnaire, Part I-A, of the Liaison Committee on Medical Education, Section for Operational Studies. Totals may not sum because of rounding.

days per week in teaching or research, as opposed to patient care (Association of American Medical Colleges 1996, 16).

As I stated earlier, some analysts of academic medical centers have argued that any decline in the revenues of faculty practice plans is likely to squeeze available subsidies to research and education. At first glance, the aggregate data reveal little difficulty making that case. As table 2 shows, revenues in constant dollars of faculty practice plans have grown at an annual rate of 5.4 percent over the past three academic years, comparable to the total average revenue growth rate for medical schools of 5.0 percent. Such a calculation tells us very little, however, about changes in the contributions from faculty practice plans to medical schools. Assessing contributions requires information on operating margins. It is possible, for example, that growth in the revenues of faculty practice plans is attributable to a larger staff or performance of a greater quantity of services, even if at lower prices to consumers. Indeed, the Association of American Medical Colleges' analysis of faculty practice plan data shows modest declines in constant-dollar revenue per clinical faculty member after 1993 and somewhat greater declines in margins after 1991 (Association of American Medical Colleges 1996, 18, figure 12).

Why might such declines in margins be more likely to occur in recent years than in the past? Traditionally, faculty practice plans likely exploited local monopoly power to generate high faculty compensation and operating margins. Health maintenance organizations are increasingly competing with faculty practice plans, putting downward pressure on margins. While the revenues of faculty practice plans are generally based on fee-for-service payments, HMOs' revenues are generally based on per diem and fixed case rates and on capitated payments. As competition from HMOs becomes more intense, medical schools will likely experience lower margins from the revenues of faculty practice plans.

Analysts have found some evidence of the effect of

competition with HMOs. In a recent study, the Association of American Medical Colleges examined trends in the revenues of faculty practice plans and margins for schools in markets with "high" and "low" HMO penetration (Association of American Medical Colleges 1996, 19, figure 13).[8] Between 1989 and 1995, average revenues of faculty practice plans and revenues per clinical faculty member grew more rapidly for schools in markets with low levels of HMO penetration. Operating margins declined by more than 50 percent in high-penetration markets, versus an increase of about 30 percent in low-penetration markets. Although such comparisons are not definitive (for example, costs or the mixture of services may vary across high- and low-penetration markets), they are suggestive of a potentially significant impact of HMO penetration on discretionary funds in academic medical centers.

Are Financing Shifts Adversely Affecting Research?

How should we think about a potential decline in discretionary funds for academic medical centers from a public policy perspective? Academic medical centers voice concerns about the effects of the funds shortfall on basic and clinical research expenses. Those effects need not be the only, or even the primary, consequence of a decline in the profitability of faculty practice plans. For example, to the extent that monopoly profits increased clinical compensation, the loss of those "profits" might necessitate a reduction in compensation. Alternatively, academic medical centers might reorganize faculty practice plans or even their academic structures (Iglehart 1994, 1995; Korn 1996).

A Simple Model. How could one assess whether changes in the income of faculty practice plans affect research expenditures[9]—the central concern voiced by academic medical centers and many policy makers? As I noted earlier, it is difficult to draw inferences from trends in the revenues or

margins of faculty practice plans.

In principle, we can think of research expenditures as an "investment" in potentially promising research "output." Schools with higher-quality researchers are more likely to raise more funds for research investment and have higher levels of research. In addition, in some periods, academic medical centers may collectively have greater expenditures on research (say, because of shifts in the supply of new research ideas). If institutions placed no financing constraints on research expenditures—that is, if all high-quality ideas received research funding—we could model unrestricted expenditures on research, R, as a function of medical school quality, Q. If one had longitudinal data for a set of medical schools, an empirical researcher could consider the following simple model of research expenditures. Letting i index medical schools and t index time, we have

$$R_{it} = a_i + bQ_{it} + c_t + \varepsilon_{it}, \qquad (1)$$

where a_i represents time-invariant and unobservable measures of quality; Q represents time-varying and observable measures of quality; c represents aggregate shifts in research expenses; and ε is an error term.

Following the arguments often raised by academic medical centers, let us assume that financing constraints affect research expenditures. In that case, discretionary funds, D (including those from revenues of faculty practice plans), affect research expenditures, when we hold constant the true underlying school quality.[10] Hence, we re-express equation (1) as:

$$R_{it} = a_i + bQ_{it} + c_t + dD_{it} + \varepsilon_{it}. \qquad (1a)$$

Because one cannot find data to identify all unobserved heterogeneity in medical school quality and because it is difficult to measure accurately changes in medical school quality, we need some simplifying assumptions if an

empirical researcher were to implement some variation of equation (1a). If, for example, we assume that Q does not change over time, we could estimate equation (1a) by regressing expenditures on medical school dummy variables (different intercept terms for each school), year dummy variables (c_t in equation (1a)), and discretionary funds. With panel data on medical school expenditures, that approach, known formally as a fixed-effects model, allows us to identify the effects of firm-specific changes in discretionary funds on research expenditures.

Empirical Tests. Two empirical issues remain before confronting equation (1a) with medical school data on faculty practice plans. First, we must measure discretionary funds, D. In principle, we want a measure of net income of faculty practice plans, where the most easily retrievable data are on the gross revenues of the plans. Second, we need to focus on changes in discretionary income that are unrelated to the underlying research quality of the academic medical center. If, for example, the income of faculty practice plans were highly correlated with research quality, then discretionary funds might help predict research expenditures, even in the absence of financing constraints on research. To minimize that possibility, a researcher could use data on HMO penetration over time and medical school areas to predict faculty practice plan income. It seems unlikely that shifts in the income of faculty practice plans explained by HMO penetration are correlated with the underlying quality of the academic medical center.[11]

The objective of that empirical exercise is straightforward. If the estimated value of d is zero (or statistically insignificantly different from zero at a reasonable level of confidence), then the empirical case is weak for the argument that declines in the income of faculty practice plans would constrain basic research expenditures.[12] If, however, the estimated value of d is positive and statistically significantly different from zero, the case for financing constraints on

research is more persuasive.

With caveats, we can draw the basic data to carry out such a test from information collected in the Annual Financial Questionnaire completed by all accredited U.S. medical schools for the Association of American Medical Colleges. We would gather additional data on HMO penetration by market over time. See, for example, Reuter et al. (1996). I plan to pursue that empirical task in future research.

The larger question nonetheless remains: Suppose that one can make a case that shifts in faculty practice plans' contributions to the academic medical center put pressure on basic research and medical education? Should public policy intervene to guarantee academic medical centers a replacement source of funds? To that central question I now turn.

If There Is a Problem, What Is the Solution?

The financing problems of academic medical centers are not lost on policy makers (Iglehart 1994, 1995; Association of American Medical Colleges, Office of Governmental Relations 1996).

More Guaranteed Federal Support? Leaders of academic health centers have argued that reductions in discretionary funds (in large part attributable to the decline or prospective decline in contributions from faculty practice plans) would squeeze support for basic research, clinical research, and graduate medical education. At least since 1994, spokespersons for academic medical centers have encouraged a variety of proposals to establish a "permanent" base of support to maintain research and education missions of high-cost academic medical centers in the more competitive marketplace for medical services.

Four proposals during the 104th Congress included a trust fund for graduate medical education; some also addressed the concern of academic medical centers that Medicare contractor payments include graduate medical education support even for nonteaching hospitals. All those proposals incorporated a trust fund to offer a stable source of support for the activities of academic medical centers.

Representative Bill Archer, chairman of the House Ways and Means Committee, led the first charge by including a Teaching Hospital and Graduate Medical Education Trust Fund in H.R. 2491, the Balanced Budget Act of 1995 (subsequently vetoed by President Clinton). The trust fund would contain five distinct accounts, with individual funding levels and payment rules. Over the first six years, the trust fund would receive funds from transfers from the Medicare program and $13.5 billion in general revenue support.

A second proposal appeared in the so-called blue dog Democrat plan, the Common Sense Balanced Budget Act of 1995, championed by Representative L. F. Payne. That plan emphasized changes in payments from the Medicare-adjusted average per capita cost calculation—in particular, payments by Medicare for direct graduate medical education, with the balance channeled to deficit reduction.

Representative Ken Bentsen introduced a third trust fund proposal in the Medical Education Trust Fund Act of 1996, similar to the "blue dog" initiative. In the proposal, 75 percent of current Medicare payments, adjusted by the average per capita cost calculation, would be returned to teaching and disproportionate-share hospitals (the remainder going to deficit reduction). In addition, 75 percent of direct graduate medical education payments would be placed in a trust fund to be distributed according to a formula determined by a new National Advisory Council on Post-Graduate Medical Education.

Senator Patrick Moynihan introduced in his own bill (S. 1870, the Medical Education Trust Fund Act of 1996) free-standing legislation for a trust fund for graduate and undergraduate medical education that would provide av-

erage annual payments of $17 billion between the 1997 and 2001 fiscal years. The trust fund would be financed from a 1.5 percent tax on all health insurance premiums, existing Medicare direct graduate medical education and indirect graduate medical education payments, and a 5 percent assessment on the federal share of Medicaid expenditures for acute health care services. In addition, the legislation would establish a separate medical school account.

Public Finance and Political Economy Concerns. Such proposals to create trust funds for medical education or medical schools raise both public finance and political economy concerns. Those concerns should be important elements of the current policy debate over financing problems faced by academic health centers, even if one accepts the premise that policy makers should increase public support for basic and clinical research and for medical education.

First, for Congress to apply proper cost-benefit analysis in public finance, competing claims on public revenue must make their case. If Congress believes that the marginal benefit of additional subsidies to academic medical centers is very high, then it should increase its support of research, teaching, and uncompensated care, while decreasing support for other discretionary programs. To insulate academic medical centers from that budgetary comparison would deny Congress the right to shift budget priorities, as well as mitigate financial discipline on the cost structures of academic medical centers.

At first blush, such an argument may sound both correct and naive. Economists often call for greater budgetary transparency, to little avail. Moreover, recent reports by the Congressional Budget Office have suggested that for the federal budget deficit to continue to decline after 1998, something close to freezing discretionary spending in nominal terms will likely be required—indicating real cuts in discretionary outlays. The defense component of discretionary spending has already declined significantly in re-

cent years, so one might make the case that the health research and public health component (about 8.5 percent of total discretionary spending) will not emerge unscathed.

Against that gloomy backdrop are two countervailing arguments. First, it is by no means clear that appeals for increased research support from the National Institutes of Health (NIH) will fall on deaf (congressional) ears.[13] Congressional support for basic medical research has historically been strong, both absolutely and relative to other research areas. NIH has a university research budget of approximately $7 billion and is the most significant federal sponsor of university research. By all accounts, the NIH will receive large increases in support in the fiscal year 1999 budget.[14]

Second, payments for research and education in academic medical centers can be addressed in the general context of Medicare reform. Cohen (1997) argues, for example, that federal support for biomedical research through Medicare—not including direct and indirect medical education payments—and the federal share of Medicaid are in the range of $600 million–$800 million in recent years. Potential changes[15] in the mechanisms through which the federal government provides assistance for graduate medical education include opening up the market for that education by offering vouchers or replacing the financing of that education with more targeted subsidies to encourage teaching hospitals to continue to supply public goods.

In public financing, policy makers generally use dedicated trust funds to direct user fees to their assigned use (the largest two trust funds by far are the highway trust fund and the airport and airway trust fund). Those funds receive financing from excise taxes to support the publicly designated activity. While one can argue whether any such dedicated trust funds are efficient public financing vehicles, the major existing trust funds are closely tied to the benefit principle in tax policy. By contrast, policy makers largely

premise strong public support for biomedical research and education on externality and public good arguments. As a society, we receive benefits of biomedical research and training beyond the cost we pay in any patient care transaction. Hence, biomedical education and research offer legitimate arguments for support from general revenues. Nevertheless, they should compete with other externality arguments—say, for other research or education generally—in the budget process.

The second concern about creating a dedicated trust fund for medical education or research relates to the political economy of doing so. The existence of a guaranteed level of support blunts incentives for cost containment and reorganization in academic medical centers. In addition, a guaranteed level of support increases the likelihood of rent-seeking activity by academic health centers to argue for "changes" in the trust fund or to argue about the distribution of resources.

Conclusion

One cannot question the fact that America's academic medical centers are in a period of profound shifts in financing, and the traditional cross-subsidies among patient care, education, and research are under pressure. Many commentators have focused particular attention on the decline in discretionary funds available to academic medical centers because of current or prospective declines in patient care income in the increasingly competitive health care marketplace—and because of the consequences of those declines for centers' commitments to biomedical research and education.

I have three comments to make on that assessment. First, convincing empirical evidence does not exist that links market-driven changes in centers' discretionary funds with basic or clinical research expenditures, although such a link is plausible. Second, to the extent that trends in financing

suggest cuts in research and educational funding for academic medical centers, the centers should engage Congress in an open debate over the level of support. Third, proposals to create dedicated trust funds for medical education or research raise both public finance and political economy concerns; such proposals are inefficient solutions to the claim that market forces have rendered current research and educational support inadequate.

Perhaps most fundamentally, shifts in medical school financing may necessitate a rethinking of the organizational structure of academic medical centers in general. As Dr. David Korn, a former dean of the Stanford Medical School, points out in a very thoughtful essay, that is a difficult task. According to Korn, "The overarching challenge is to develop strategies that will preserve the clinical academic *mission*; but I am concerned that more often, the effort seems to be to preserve the clinical academic *enterprise*, and the two are neither congruent nor necessarily compatible" (Korn 1996, 1038). Such rethinking is beginning to occur[16]—and is likely the precursor of shocks to be felt by the mother of all cross-subsidy systems, the American research university.

Notes

1. See, for example, the discussion in Barron (1997).

2. For the academic year 1995–1996, 44 percent of plans were part of the university with which the medical school is affiliated, 18 percent were separate not-for-profit entities, 10 percent were foundations, 5 percent were professional corporations, and the remainder were generally combinations of those legal structures. See Ganem and Krakower (1997, 760).

3. The Association of American Medical Colleges (1996) estimates that about 16 percent of the revenues of faculty practice plans are returned to the medical school and the physicians' department via the dean's tax and other departmental support.

4. The number of allopathic medical schools has remained almost constant at 125 since 1980, with 74 public schools and 51 private schools. The exception is the closure of Oral Roberts University Medical School. Over that period, some schools switched accreditation status from provisionally accredited to fully accredited.

5. See also American Association of Medical Colleges (1996) and Ganem and Krakower (1997).

6. One must be cautious about focusing too closely on growth in revenues of faculty practice plans because some growth may be traceable to changes in medical schools' reporting practices.

7. See Reuter (1996, 15, table 1).

8. The study assumed that "high" and "low" penetration rates were greater than 40 percent and less than 10 percent, respectively.

9. In principle, one is interested in links to research outcomes, not just to expenditures on research. Both because of the attention paid to research expenditures and because potential data on expenditures are easier to obtain, I focus on them here.

10. That specification draws on models of business decisions based on fixed investment, in the presence of financing constraints; see, for example, the review in Hubbard (1998).

11. Formally, that amounts to using HMO penetration as an instrumental variable for the income of faculty practice plans. That variable is correlated with the income of faculty practice plans but, arguably, not with school research quality. The researcher would replace data on D in equation (1a) with the fitted values from a regression of D on HMO penetration.

12. Impacts on clinical research are more difficult to measure. For example, competition from managed care plans may force clinical faculty to spend more time on medical practice and less time on experimenting with clinical improvements. Although that loss of time may be important, its value is difficult to measure.

13. Admittedly, a more subtle issue remains. Subsidies to researchers provided by the discretionary funds of academic medical centers may pay for start-up costs for research-oriented faculty and increase the likelihood of faculty members' obtaining NIH support. See, for example, the discussion in Feller (1997) and the suggestive evidence in Moy et al. (1997).

14. See Pear (1998).

15. For a review of options for changing Medicare's role in graduate medical education, see Congressional Budget Office (1995).

16. See, for example, the discussions in Iglehart (1995), Korn (1996), and Freudenheim (1997).

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