

Academic Capital Structure and Planning

The Forum for the Future of Higher Education's Master Class has for the past few years focused on the asset side of institutional balance sheets and on endowment management. In 2006 the Master Class turned to the liability side, looking at debt, its relationship to endowment assets, and optimal capital structure of institutions as a whole. Stewart Myers, the Robert C. Merton (1970) Professor of Finance at the MIT Sloan School of Management, and William Massy, former chief financial officer at Stanford University and currently president of the Jackson Hole Higher Education Group, take an integrated view of investment and financing to ensure that the asset and liability sides of the balance sheet work together. Their approach indicates, for example, that the appetite for risk in the endowment should respond to the financial risk created by debt financing of building projects or other capital investments. This exploratory session was the first in a series of Finance Forums that will deal with integrated financial planning.

NOTEBOOK

Endowments and the rest of an institution's assets and liabilities should not be managed separately. The two sides of the balance sheet should work together.

Asset allocation for endowments should try to strike the best balance of risk and return. When overall risk changes—for example, by taking on additional debt—the financial risk of borrowing should be offset by shifting endowment assets to fixed-income investments.

Restrictions on endowment funds mean that adjustments to compensate for changing risk should usually be done with unrestricted quasi-endowment.

Transition risk is a political reality in long-term decision making. Transition risk can make it difficult to implement a long-term investment and operating plan.

Optimal Capital Structure

Determining the optimal capital structure for colleges and universities requires significant modifications to the financial theory of nonprofit enterprises. The task raises questions in four core strategic areas:

Debt capacity. How much debt is best, given an institution's endowment and operating characteristics?

Asset and liability planning. How should debt be structured? Should the endowment's asset allocation change as debt is added, and if so, how?

Revenue and expenditure volatility. How does debt capacity and asset-liability mix depend on revenue and cost volatility?

Operating reserves. What operating reserve balances are optimal, given the need to stabilize budgets in the face of revenue and cost volatility?

These questions have been answered in principle for profit-making enterprises,¹ but there is no equivalent theory for nonprofits.

For-profit companies seek to maximize value and risk-adjusted returns to shareholders. Capital structure affects both risk and return. Models for optimizing capital structure are in practice complex and not always easy to apply, but nevertheless straightforward in principle. The objective is to find the capital structure that maximizes the market value of risk-adjusted future returns to shareholders.

Colleges and universities are nonprofit and have no shareholders or stock prices. But we can still focus on value added. For example, steadily growing revenue, coupled with good physical plant and affordable debt service, will allow the institution to protect and build valuable academic programs. On the other hand, volatile revenue streams, capital shortages, and burdensome debt service will disrupt academic operations and erode value. Deterministic models that link revenues, expenditures, and capital to value creation exist already.² But we need to build risk into these models in order to understand financing for educational institutions.

Financing a Dorm

The financing of a dorm illustrates the principles behind the management of an educational institution's balance sheet. Assume that a university plans to build a dorm at a cost of \$25 million. Financing can come from borrowing or from unrestricted funds functioning as endowment (quasi-endowment).

The simplified balance sheet in Figure 1 shows

assets on one side and debt on the other. The difference between total assets and total debt and other liabilities is the institution's net worth. Values are fair market values, not book values.

Figure 1.

| University Capital Structure | |
|--|-----------------------|
| Market-value balance sheet | |
| Endowment (ENDOW) | Debt (D) |
| Fixed income (FI) | Other liabilities (L) |
| Equities and other (EQ) | Net worth (NW) |
| Assets outside endowment (A) | |
| V | V |
| Make sure the two side of the balance sheet work together. | |

The university can pursue one of two strategies to finance the dorm, as shown in figures 2a and 2b.

Figure 2a.

| Financing a Dorm | |
|------------------|----|
| Pay | |
| ENDOW | D |
| FI | |
| EQ | L |
| Dorm = 25 | |
| A | NW |
| V | V |

Figure 2b.

| Financing a Dorm | |
|--|--------|
| Borrow | |
| ENDOW | D + 25 |
| FI + 25 | |
| EQ | L |
| Dorm = 25 | |
| A | NW |
| V | V |
| FI + 25 not for tax arbitrage, just a prudent adjustment in investment strategy. Offsets financial risk from D + 25. | |

Figure 2a assumes financing from the endowment, or from funds that could have been added to the endowment. Assets outside the endowment go up by \$25 million, the value of the dorm.

Allocating endowment assets between fixed income and equities (or other risky asset categories) requires careful analysis and judgment. We assume that the endowment managers have done the analysis and exercised judgment, taking the new dorm asset into account. Therefore we assume that the balance of fixed income and equity investments in Figure 2a is optimal, that is, the best balance of risk and return.

Figure 2b shows the effects of financing the dorm by borrowing \$25 million. Debt rises by \$25 million, and endowment assets are \$25 million higher than in Figure 2a. The additional assets are invested in fixed income in order to offset the financial risk of borrowing. The \$25 million of additional fixed-income assets exactly balances the \$25 million of debt. Otherwise the balance sheets in figures 2a and 2b are identical. The optimal risk-return balance in Figure 2a is preserved in Figure 2b.

Investing in the new dorm may trigger rethinking of investment strategy in the endowment. But if the strategy is optimal in Figure 2a, then the same risk-return balance should be maintained in Figure 2b. The \$25 million of endowment that would otherwise be invested in the dorm (in Figure 2a) must therefore be invested in fixed income to offset the risk of the additional debt on the other side of the balance sheet.

If this seems counterintuitive and not conforming to existing practice, read on. The idea that the endowment asset allocation should be adjusted to reflect changes in the rest of the balance sheet is fundamental to the unified financial theory of college and university finance.³

Absent tax considerations, borrowing to finance the dorm does not change net worth or the institution's overall risk, because the financial risk of borrowing is offset by additional fixed-income investments.

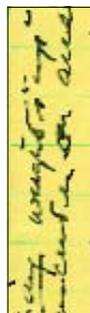
But educational institutions can borrow at tax-exempt rates. The additional \$25 million in fixed income in Figure 2b can earn more than the interest rate on the \$25 million of debt. Thus borrowing to finance the dorm is better, because net worth increases. But the additional fixed-income assets in Figure 2b are not added just because of taxes. These assets would be added anyway, as a prudent adjustment in

investment strategy to offset the financial risk of increased debt.

Tempting Fallacies

Absent taxes, the balance sheet in Figure 2b is no better or worse than in Figure 2a. One is tempted to “improve” Figure 2b, however. Why not invest the cash released by borrowing in the endowment as a whole? The average return on a blend of fixed income and equity investments is higher than on just fixed income.

This reasoning is dead wrong. Expected endowment return would increase, but the extra return comes only from extra risk.

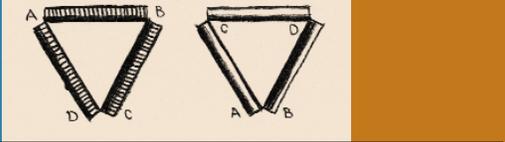


The idea that the endowment asset allocation should be adjusted to reflect changes in the rest of the balance sheet is fundamental to the unified financial theory of college and university finance.

Suppose, for example, that we change Figure 2b so that \$10 million is invested in fixed income and \$15 million in equities. Then the original asset allocation in Figure 2a, which was optimal, is upset. If this change adds value, then it should have been implemented in Figure 2a; there was no need to borrow. An inferior asset allocation should be adjusted immediately, not just in response to new debt financing.

It is also tempting to borrow short term outside the endowment and to shift the endowment toward long-term fixed-income securities, which have on average generated returns about 2 percent higher than short-term borrowing costs.

Endowments invest for the long run, and the average maturity of their fixed-income portfolios is longer than for many other investors. But risk increases with maturity, so endowments also invest at short maturities. Endowment managers are paid to strike the right balance between short and long maturities. The resulting average maturity should be incorporated in the fixed-income assets in Figure 2a. If that maturity is best, there is no reason to disturb it. Therefore in Figure 2b, the \$25 million released by borrowing should be invested at the same maturity as the borrowing. If a longer-term strategy adds value,



the institution should not wait until it borrows to adjust the mix of maturities.⁴

Discussion

Determining a university's optimal capital structure is an exercise that should focus on managing risks on both the asset and liability sides of the balance sheet. As in the "global accounts" model Gordon Winston presented to the Forum in 2000, a robust risk assessment entails an accurate and thorough fair market valuation of institutional assets outside of endowment. This information is critical to an institution calculating its appropriate debt capacity and endowment asset allocation, which in turn affect how it stabilizes its budget in the face of revenue and cost volatility.

Financial risk is not the only type of risk that matters...The business risk of not taking on debt to fund new dorms, student centers, athletics facilities, or research labs must be taken into account.



Regardless of how well and how consistently an institution offsets its borrowing risks by adjusting its endowment asset allocation, there are practical limits to debt. Colleges and universities have to manage cash flow to weather the budget crunches that all institutions, even the most wealthy, seem to confront from time to time. An institution's debt also affects its standing with rating agencies and therefore its financing options. It can be difficult to convince creditors and rating agencies that the risk of debt liabilities has really been offset by adjustments to asset allocation in the endowment. In practice, this disconnect lowers debt capacity.

Financial risk is not the only type of risk that matters. Colleges and universities today are engaged in a facilities arms race that compels them to keep up with each other or risk falling behind in reputation and rankings. The business risk of not taking on debt to fund new dorms, student centers, athletics facilities, or research labs must be taken into account.

Transition risk enters when planning for the distant future. Today's decision makers cannot control the decisions of their successors. For example, a major con-

struction program might extend 25 years into the future. But new actors (a president, trustees, or financial officers) can arrive after 15 years and change course. Transition risks are inevitable with any kind of long-term decision making, but they are particularly relevant to facilities planning and financing. Ideally, today's decision makers would provide an appropriate degree of financial flexibility for their successors, but this is more easily said than done.

Adjusting the mix of endowment assets to offset changes in financing is complicated by the complexity of institutional balance sheets. A large institution typically has many separate pools of income and expenses, and endowments' financial structures can be particularly messy. Stanford, for example, has a blended endowment pool of approximately 6,000 separate restricted funds; Harvard has roughly 13,000 such funds. To offset the risk of debt financing for major capital projects, it may be best to limit large compensatory adjustments to unrestricted endowment funds.

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¹ See R. A. Brealey, S. C. Myers, and F. Allen, *Principles of Corporate Finance*, 8th ed. (New York: McGraw-Hill Irwin, 2006), especially chs. 17 and 18.

² See, for example, David S. P. Hopkins and William F. Massy, *Planning Models for Colleges and Universities* (Stanford, Calif.: Stanford University Press, 1981), ch. 3; William F. Massy, "Collegium Economicum: Why Institutions Do What They Do," *Change*, May–June 2002; and William F. Massy, *Honoring the Trust: Quality and Cost Containment in Higher Education* (Bolton, Mass.: Anker, 2003), ch. 2.

³ Educational institutions with significant endowments have ample flexibility to adjust asset allocation and risk on the left-hand side of the balance sheet. Most corporations do not have this flexibility. A corporation invests in real, not financial assets. Risk is determined by the nature of the corporation's business.

⁴ Notice that borrowing short and lending long has the same impact as selling off short maturities and investing the proceeds at long maturities.