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To borrow or not to borrow? An analysis of university leverage decisions ☆

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ABSTRACT

This paper investigates the decisions of universities to issue debt. We test whether the expected value and uncertainty of a university's nonfinancial income (the income generated by sources other than its endowment) affect its leverage (the ratio of the value of an institution's liabilities to the value of its assets). We find that leverage is negatively related to both the expected value and the uncertainty of nonfinancial income. On average, increasing the expected value of nonfinancial income by one standard deviation decreases a university's debt by about $5.1 million, while increasing the uncertainty of nonfinancial income by one standard deviation decreases debt by about $2.7 million. This behavior is consistent with the pecking order theory of capital structure, which posits that managers deplete available internal funds before issuing debt. We also show that the leverage decisions of universities have become less sensitive to expected nonfinancial income but more sensitive to its uncertainty since the Great Recession.

1. Introduction

According to Moody's rating agency, university debt levels doubled from 2000 to 2011 (Martin, 2012). As the amount of debt issued by universities has grown, so too have concerns about their borrowing practices. The Moody's study, for example, argues that the “Law of More,” the collective movement by universities to build lavish facilities in order to attract students, has driven this trend. Indeed, several commentators have suggested that some schools have been borrowing so much that "bond investors have grown wary of their debt" (Korn and Kuriloff, 2015). A *Forbes* article finds fault with debt for another reason, arguing that it is detrimental to the mission of higher education, as public schools with higher debt levels are forced to raise tuition and to admit a greater percentage of wealthy, out-of-state students (Freedman, 2014).

Not all the commentary on increased debt has been negative, however. The University of Chicago borrowed nearly $3 billion between 2002 and 2013, but one municipal fund manager saw nothing particularly wrong with it: “It's an environment where debt is relatively cheap for [the university] to issue, so I'm not sure it's that much of a negative … I don't find it too alarming” (McDonald and Chappatta, 2014). In this light, increased debt is simply a rational response to low interest rates.

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Before making normative judgments regarding universities' use of debt, it is important to understand how universities decide whether and how much to borrow. Despite concerns about universities' borrowing practices, the determinants of the debt decisions of universities are largely unexplored in the literature on the financing of higher education.[1] This paper aims to fill that void.

We view the problem through the lens of the rich literature on the capital structure of for-profit enterprises. Two approaches dominate this literature – the static trade-off and the pecking order theories. We argue that, with suitable modifications, the two theories can be applied to universities, and that they generate empirically testable predictions about how the expected value and uncertainty of a university's nonfinancial income (i.e., income from sources other than the university's endowment, including tuition, government funding, and private donations) affect its demand for debt. We use panel data on a sample of 3703 universities from 2003 to 2013 to test these models. Because our data extend through 2013, we are able to examine whether the experience of the Great Recession has affected universities' approach to taking on debt.

Section 2 provides background information comparing the financial decisions of universities with those of for-profit corporations, a discussion of the leading theories of capital structure, and a review of the pertinent empirical literature. In Section 3, we describe the data and present summary statistics. Section 4 details the empirical methodology, including how the expectation and uncertainty of university nonfinancial income are calculated. Section 5 presents and discusses the findings. Our main results are as follows: (1) Leverage – the ratio of total debt to total assets – is negatively related to both the expected value and uncertainty of nonfinancial income. A one standard deviation increase in expected income decreases the debt of a university with the average asset value by $5.1 million. A one standard deviation increase in the uncertainty of nonfinancial income decreases debt by $2.7 million. These findings are consistent with the pecking order theory of capital structure. (2) Since the Great Recession, university leverage decisions have become less sensitive to expectations of nonfinancial income but more sensitive to uncertainty in these income flows. This is consistent with the notion that universities have become more concerned with the possibility of financial distress. (3) The leverage choices of public and private universities respond similarly to changes in the expected value of nonfinancial income and its uncertainty. (4) Universities with relatively small endowments are more sensitive than universities with larger endowments to both the expected value and uncertainty of nonfinancial income. (5) All of these findings are robust to the inclusion of various controls that have been included in previous analyses of nonprofit leverage decisions. We conclude in Section 6 with a summary and suggestions for future research.

2. Background and literature review

2.1. Corporate versus university finances[2]

The term “capital structure” refers to an organization's set of financing methods. Three major sources of capital are available to for-profit firms: equity, debt, and retained earnings. Because the theoretical literature on capital structure was originally developed for corporations, we discuss the key differences between universities and for-profit firms as they relate to each of these three sources of capital.[3]

2.1.1. Equity

Perhaps the most salient difference between universities' and corporations' capital structures is that universities do not use equity at all, simply because they cannot issue stock. Unlike corporations, universities do not have shareholders (owners). The individuals responsible for operating the university (for example, entering into contracts and even dissolving the university, activities performed by private owners in for-profit firms) are its trustees. Since universities are not privately owned, there is no way to sell partial ownership of the university in the form of equity.

2.1.2. Debt

The main difference between universities and corporations with respect to debt arises from the fact that universities enjoy tax-exempt status. That is, universities (1) do not have to pay corporate income taxes[4] or taxes on the returns to their investments and (2) can issue tax-exempt debt. Because lenders to universities do not have to pay taxes on the interest they receive, universities can borrow at lower rates than taxable entities.[5] Tax-exempt debt combined with the ability to generate tax-free returns on resources stored in endowments creates the possibility of tax arbitrage – that is, borrowing at low

[1] For an exception, see Hansmann (1990) who discusses universities' use of debt in the context of their tax-exempt status. Additionally, Bowman (2002), Denison (2009), and Calabrese (2011) analyze capital structure for nonprofit organizations in general, and their datasets include some observations on universities.

[2] See Bowman (2002) for a more in-depth discussion of the differences in the finances of for-profit and nonprofit organizations.

[3] Although for-profit universities do exist, we omit them from our analysis because their capital structure decisions likely differ substantially from nonprofit universities. When we refer to “universities” as a group, we are referring only to public and private not-for-profit universities.

[4] Even if an organization is considered tax-exempt, it still has to pay taxes on its unrelated business income. This is income received from a trade or business that is “not substantially related to the charitable, educational, or other purpose that is the basis of the organization's exemption” (Internal Revenue Service, 2015).

[5] The law regarding the use of tax-exempt debt has varied over the years. Prior to 1986, all nonprofit (IRC code 501(c)(3)) organizations, including universities, could sell an unlimited amount of tax-exempt bonds. In 1986, Congress placed a $150 million cap on outstanding non-hospital tax-exempt