

The valuation of IPO and SEO firms

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Abstract

We examine the pricing of initial public offering (IPO) and seasoned equity offering (SEO) firms using a stochastic frontier methodology. The stochastic frontier framework models the difference between the maximum possible value of the firm and its actual market capitalization at the time of the offering as a function of observable firm characteristics. Using a new data set, we find that commonly used pricing factors do indeed influence valuation. *Ceteris paribus*, firms in industries with great earnings potential are more highly valued, and IPO firms are underpriced. Theories regarding underwriter reputation or windows of opportunity for equity issuance are not supported in our empirical results. © 2001 Elsevier Science B.V. All rights reserved.

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1. Introduction

Valuation plays a central role in corporate finance for several reasons. First, corporate control transactions such as hostile takeovers and management buyouts require the valuation of equity. Second, privately held corporations that need to set a price for their initial public offerings, or public firms that require further equity financing, must first establish the value of their equity. Finally, the estimated equity value is important in setting the capital structure of these issuing firms.

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Standard finance models imply that the value which the market places on a firm's equity should reflect the firm's expected future profitability. In the absence of data on the latter, it is common to use variables that might proxy for future profitability (e.g. net income, revenue, earnings per share, total assets, debt, industry affiliation, etc.) in an effort to value equity. One purpose of the present paper is to investigate the roles of various potential explanatory variables in valuing equity using a new, extensive data set involving many firms and many explanatory variables. However, it is often the case that firms, which are similar in terms of these observable characteristics will be valued quite differently by the market. We refer to this difference as "misvaluation". Accordingly, a second purpose of this paper is to investigate this misvaluation using stochastic frontier methods. The questions of particular interest are whether initial public offering (IPO) and seasoned equity offering (SEO) firms are valued in a different manner and whether they exhibit different patterns of misvaluation (e.g. are IPOs underpriced relative to SEOs?).

Using a sample of 2969 IPO and 3771 SEO firms between 1985 and 1998, we find that IPO firms are misvalued (e.g. underpriced), while SEO firms are almost efficiently priced. Furthermore, the market capitalization of an offering firm is positively related to net income, revenue, total assets, and underwriter fees, and negatively related to its debt level. *Ceteris paribus*, firms in industries with great earnings potential such as chemical products, computer, electronic equipment, scientific instruments, and communications are more highly valued, whereas firms in more traditional industries such as oil and gas, manufacturing, transportation and financial services are valued less. Finally, we find no evidence that underwriter reputation or macroeconomic factors are related to misvaluation.

Hunt-McCool et al. (1996) is the paper most closely related to our own. Their paper examines the IPO underpricing phenomenon using a stochastic frontier methodology. The authors stress that the advantage of stochastic frontier models is that they can be used to measure the extent of underpricing without using aftermarket information. This property could be very useful to corporate executives involved in IPOs when they select underwriters and determine the offer price. Hunt-McCool et al. (1996) conclude that the measure of premarket underpricing cannot explain away most anomalies in aftermarket returns and that the measure of IPO underpricing is sensitive to the issue period (e.g. hot versus nonhot IPO periods). The contributions of our work can be illustrated in contrast to their methodology. A first difference is that we apply the stochastic frontier modeling approach to both IPO and SEO firms. By construction, the stochastic frontier methodology uses firms that are efficiently priced (e.g. not misvalued) to estimate the frontier, and then misvalued firms are measured relative to this frontier. This of course, assumes that some of the firms are efficient. Seen in this way, it is interesting to see what happens if we include data both on firms that we expect to be undervalued (e.g. most IPO firms) and on those that we expect to be efficiently priced (e.g. many SEO firms). This is an important distinction between our paper

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