

# Chapter 15

## Software Firm Cost Structure and Its Impact on IPOs in the E-Commerce Era

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### ABSTRACT

*The first decade of the e-commerce era saw an increase in activity in the software development industries as new firms were created and existing firms made acquisitions. Many firms pursued a growth strategy and this growth required capital that was often obtained through an initial public offering (IPO) of equity. Software firm cost structures are very different from traditional physical goods firms because their marginal costs are much lower, but what is not known is whether this affects their financing strategies. In this study we compare software firm and traditional firm IPOs using data from 780 IPOs offered during the late dot-com era (1998-2002) to identify differences in firm and offer characteristics, investment risk, initial returns, and underwriting activity. We find that the characteristics and performance of software firm IPOs are significantly different from IPOs offered by traditional firms during this time period providing supporting for our conclusion that firm cost structure should be considered when analyzing IPOs and other strategic issues.*

### INTRODUCTION

The first decade of the electronic commerce (e-commerce) era, from about 1993 through 2002, was an exciting and tumultuous time. The

introduction of the World Wide Web (Web) in the early 1990s, and the ongoing development of related e-commerce applications throughout the 1990s and early 2000s, created demand for new software products and opportunities for new software distribution processes. This led to an increase in activity in the software industries

DOI: 10.4018/978-1-61350-462-8.ch015

including growth in existing companies as well as the creation of new firms.

From 1997 to 2002, software publishing company receipts grew from \$61.7 billion to \$103.7 billion, annual payrolls grew from \$18.4 billion to \$34.6 billion, and the number of paid employees rose from 266 thousand to more than 353 thousand (U.S. Census Bureau, 2004). During this same period, the number of firms fell from roughly 12 thousand to 9.9 thousand as competition grew, and firms either failed or were purchased by existing companies. Because many firms chose some form of strategic growth strategy to capitalize on these external opportunities, there was also an increase in the need for capital to finance growth. The choice for many software firms in the late 1990s and early 2000s was an initial public offering (IPO).

In this research we show that the timing and pricing of IPOs is different for software development (SWD) firms than for traditional firms. We argue that because of fundamental differences in cost structures, particularly pre-IPO fixed to variable cost ratios, as well as the “all-or-nothing” nature of SWD prospects, SWD firms needed to acquire capital earlier in their life cycle than traditional firms. SWD firms “load” their operation up front with fixed costs, market the product, and then hope for the best. Traditional firms can make significant adjustments to variable and fixed costs initially and throughout the firm’s life.

These basic differences in SWD and traditional firms impact their long-term potential and the nature of the IPO. As a result SWD and traditional firms are viewed differently by the market and their IPO underwriter. If SWD firms wait until the market determines the winners and losers it will be too late for many to recoup their initial investment. Because traditional firms can make necessary changes after the IPO they can often avoid eventual failure. Moreover, the potentially dramatic long-run return of a small percentage of SWD firms, like Microsoft, as compared to the more broadly distributed long-run market values of traditional firms, makes SWD IPOs more like

an option than those of traditional firms. Hence, the early after-market value of SWD firms, relative to their anticipated offer price as set by the firm and their IPO underwriter, would be more positively related to risk, like an option, than traditional firms.

IPOs have been studied for decades and, except for occasionally distinguishing technology firms with an indicator variable, these earlier studies grouped all firms together for the purpose of identifying the factors that affect returns, risk, and likelihood of failure (see Ritter & Welch, 2002, for a synopsis of IPO research). To the best of our knowledge no one has separated issuing firms based on their cost structures when analyzing IPO results. In the following we argue that one way to explain the differences in certain offering details is through an examination of a firm’s cost structure.

These issues have only been addressed indirectly in previous research. Loughran and Ritter (2004), for example, show that firms that issue seasoned securities have falling operating profit to asset ratios following the offering and it is worse for the small issues. However, nearly 15% of the firms were in industries with extremely low marginal costs similar to software companies. The cost structures of these firms and their product market may have been an important factor in explaining the drop in operating profit. As noted earlier, technology/Internet IPOs, where all firms are considered equal regardless of their cost structure, have been studied to some extent, but there is a dearth of research on the relation between cost structure and IPO outcomes. This is the primary issue addressed by this study.

In the following section we review some of the relevant literature and elaborate on the theoretical differences between SWD and traditional firms and how they impact their IPO characteristics. The section culminates in testable hypotheses. The next section describes the data followed by the methods and results. Finally we provide our conclusions along with implications, and directions for future research.

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