An Improved Real Option Pricing Model of Internet Asset

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ABSTRACT

This article shows that against the neglect on Internet asset value in traditional financial accounting theory and practice, the authors proposed an improved real option model for assessing Internet asset value based on Metcalfe’s law and adaptive expectation hypothesis, and used it to assess the Internet asset value of Tencent company. The results showed that the improved real option model can accurately assess the value of Internet asset, and the assessment result was extremely consistent with the result assessed by efficient market theory algorithm. The results also showed that Internet asset value played a predominate role in Internet enterprise overall value, and both the initial revenue growth and estimated time had a significant positive effect on Internet asset value, and long-term industry operation cost coefficient and short-term corporate operation cost coefficient had a significant negative effect on Internet asset value. The results indicated that cutting the cost or increasing the network users could promote the value of Internet asset.

KEYWORDS

Internet Asset, Pricing Model, Real Option, Tencent Company

1. INTRODUCTION

According to the “36th Statistical Report on Internet Development in China”, released by National Internet Network Information Center, up to June 2015, the number of China’s Internet users has reached 668 million, and the Internet penetration rate has reached 48.8%. China’s network information industry is gradually becoming a crucial driving force in its economic development. With the rapid development of network information industry, China has emerged a lot of Internet companies whose main business are to offer Internet products and services, among which the most representative Internet companies are Baidu, Alibaba and Tencent (BAT). However, the prosperity of Internet economy reveals the defect of traditional accounting theory, as it ignores Internet intangible asset value, which leads to the problem that the book value in balanced sheet is inconsistent with the total value of Internet company. Meanwhile, the market values of listed Internet companies highly surpass their book value.

In Internet economy, there is an essential law called Metcalfe’s law, which was proposed by computer network pioneer Robert Metcalfe. Metcalfe’s law states that the value of a telecommunications network is proportional to the square of the number of connected users of the system (Metcalfe, 1995). This well explains the value sources of Internet companies, and provides a feasible idea to assess Internet asset value. From the point of view of utility value theory, there is a law of increasing marginal utility in network products consumption. As the network has an extremely strong positive...
externality and positive feedback, consumers increase the utilities from the consumption with the growth of consumers purchasing the same products. From the perspective of customer value theory, Metcalfe’s law points out that the fundamental value of Internet asset of companies comes from their own accumulated customers’ value. The value of customers contributes to the total value of Internet companies, via affecting their receipts. On the one hand, receipts from Internet companies come from the consumption of customers; on the other hand, some revenue which is not concerned with customers’ consumption contributed to the receipts, such as advertisement revenue.

It is necessary to take an appropriate measurement on the value of the Internet asset. For one thing, the accounting assessment of Internet asset helps to notice the importance of its value, optimize its capital structure, and improve asset management efficiency; for another, it helps to make up for the defect of traditional accounting theory, and to further improve the theoretical system of traditional accounting.

2. LITERATURE REVIEWS

2.1. An Overview of Intangible Asset Research

In 2006, Chinese Accounting Standards for Enterprises No. 6 has made clear the definition of intangible asset: it is an enterprise owned or controlled non-monetary asset, with no identifiable physical forms. However, some scholars still give a new definition of intangible asset from different perspectives. Barth, Kasznik & McNichols took intangible assets as an important part of the corporate overall value, which would highly influence the incomes of the companies (Barth, Kasznik & McNichols, 2001). Kaplan & Norton noticed the predominant value of intangible assets and regarded it as the former existence of the intangible outcomes (Kaplan & Norton, 2004). Mao investigated the value of intangible asset from the perspective of value creation, and explained that intangible asset is the source of corporate value creation, including enterprise innovation, the value of non-material forms of organizational design and human resources practices, which is highly concerned with its exploring ability, organizing capital and human capital (Mao, 2001). By analyzing detailed information about intangible asset of listed companies, Shao studied each kind of intangible asset has different effects on corporate accounting value between high-tech industry and non-high-tech industries (Shao, 2006).

Internet asset is an important part of intangible assets. However, there is no official definition of it. Tang referred that Internet asset was the accumulated resource from the company investment expected to bring profit. Internet asset consists of software, web sites, web users, visibility, access volume and brand image, etc. Meanwhile, he concluded the main features of Internet asset: Firstly, Internet asset exists based on internet environment and technology; secondly, a variety of Internet assets can be re-combined to form the Internet asset group; thirdly, it is accumulated resource from companies’ investment (Tang, 2011). So, this paper regards all kinds of Internet assets as an Internet asset group, and attempt to find a proper way to evaluate it.

2.2. An Overview of Asset Valuation Theory

There are two main methods, including direct and indirect assessment methods, to evaluate the value of asset in traditional valuation theory. Indirect assessment method is also known as market comparison approach. Based on the principle of substitution, this approach collects deal price of the same or similar assets in recent market, and compares their similarities and differences, then adjusts the price to fit the value of the asset being evaluated. Among the direct revenue approach valuation method, the most classic one is discounted cash flow (DCF) method. The core idea of DCF method is to estimate the expected future cash flows of asset, and then discounted the present value of asset by using the weighted average cost of capital companies (WACC). However, DCF valuation method must assume that the asset management of the project or business continues to be stable, this assumption ignores the fact that the value of future business growth opportunities currently implied (Liao, 2001).
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