Journal of Corporate Finance 40 (2016) 110–127

Contents lists available at ScienceDirect

Journal of Corporate Finance

journal homepage: www.elsevier.com/locate/jcorpfin

# Measuring the value of intangibles

Saskia Clausen[a,1], Stefan Hirth[b,*]

[a] Department of Business and Economics, University of Southern Denmark, Campusvej 55, Odense M, DK–5230, Denmark
[b] Aarhus BSS, Aarhus University, Department of Economics and Business Economics, Fuglesangs Allé 4, Aarhus V, DK–8210, Denmark

ARTICLE INFO

*Article history:*
Received 2 June 2016
Received in revised form 17 July 2016
Accepted 25 July 2016
Available online 29 July 2016

*JEL classification:*
G32
G33
G34

*Keywords:*
Intangible assets
Corporate valuation
M&A transactions
Asymmetric information
Capital structure

ABSTRACT

We propose a new earnings-based measure for the value of intangibles. To validate this measure, we compare it to commonly used proxies for intangible intensity, such as R&D expenses. While R&D expenses measure the investment in new intangibles, our new measure gauges the productivity of already existing intangibles. We show that our new measure serves as an additional factor to explain firm value, measured either as market capitalization or acquisition prices in M&A transactions. Moreover, it captures the increasing importance of intangibles over time. Finally, we present a specific application of our intangible-intensity measure in the context of capital structure. We find that more intangible-intensive firms have lower leverage.

© 2016 Elsevier B.V. All rights reserved.

## 1. Introduction

How to measure the value of a firm's intangibles? Intangibles are an important driver for corporate success. For example, Corrado et al. (2009) state that only 8% of economic growth can be attributed to the traditional 'bricks and mortar' capital investment. According to Nakamura (2010), intangible investment expenditures have risen from roughly 4% of U.S. GDP in 1977 to 9–10% in 2006. Despite their importance, intangibles are often omitted from studies in empirical Corporate Finance. This is presumably partly due to the difficulties in measuring intangibles.

We introduce a measure based on publicly observable data, which emphasizes in particular the importance of intangible-driven earnings. While such a measure will still not capture all dimensions of intangibles, we can show that higher levels of our measure for intangible-driven earnings are associated with higher value. To validate our measure, we investigate the contribution of different asset classes, e.g., property, plant and equipment (PP&E), inventory, and receivables, as well as intangibles to the value of the firm. Depending on the firm's situation, we apply two different estimates of value. First, we investigate how listed firms' market capitalization can be explained by the contribution of different asset classes. Second, we explain acquisition prices in M&A transactions. As we can regularly observe stock prices and M&A transactions are comparably rare events, the first

* Corresponding author.
*E-mail addresses:* saskia.clausen@daimler.com (S. Clausen), shirth@econ.au.dk (S. Hirth).
[1] Present address: Daimler Financial Services AG, D-70320 Stuttgart, Germany.

http://dx.doi.org/10.1016/j.jcorpfin.2016.07.012
0929-1199/© 2016 Elsevier B.V. All rights reserved.

approach clearly has the best data availability. Our two measures of value are associated with different agents and objectives. A stock investor of a widely held company focuses on the future prospects of the firm in its current structure. In an acquisition, the acquirer also evaluates the prospects of the target, but possibly restructures the business and hence is closer to valuing the individual assets of the firm.

First, we find that changes in the market capitalization are positively related to R&D expenses and the earnings-based intangibility measure. While R&D expenses measure the investment in new intangibles, our new measure gauges the productivity of already existing intangibles. We show that the effect of our measure increases in importance over time, as documented for intangibles in general by Nakamura (2010). Moreover, unlike for R&D expenditures, the effect of our new measure has not vanished during the financial crisis 2008–2012. Second, we show that measures of intangibles such as R&D expenses, trademarks, and our new earnings-based measure can consistently explain a significant part of acquisition prices. However, a higher share of tangible assets is neither positively associated with firms' market capitalizations nor with acquisition prices. Notably, this is in contrast to Berger et al. (1996). When we finally show the general importance and applicability of our new measure in a capital structure application, we confirm the finding that more intangible-intensive firms have lower leverage.

The remainder of this paper is structured as follows: In Section 2, we review the literature and introduce different existing measures for the value of intangibles. In Section 3, we develop our measure of intangible intensity and motivate it through a simple model setup. Then in Sections 4 and 5 we analyze how market values and M&A transaction prices, respectively, are affected by the value of intangibles and other firm characteristics. Section 6 presents an application on firms' capital structures. Finally, Section 7 concludes.

## 2. Measuring intangibles: existing approaches

Before measuring the value of intangibles, it has to be defined what is understood by this notion. We aim to capture value that stems from different intangible sources such as the efficiency of production processes, skilled workforce, patents, and customer databases. Consequently, intangible value includes both intangible assets in an accounting sense and in general the ability to create value by an efficient use of tangible assets. Various approaches of how to measure this value do exist.

Several issues arise when trying to measure the value of intangibles in a meaningful way. As, for example, noted by Corrado et al. (2009), firm-level as well as national accounting practice in the U.S. has historically treated expenditure on intangibles inputs (e.g., software and R&D) as an immediate expense rather than as an investment reflected on the balance sheet. This omission generates some problems for the empirical researcher. While theoretically the (in)tangibility of assets was found to be one of the main determinants of firms' investment and financing decisions, the relation is difficult to verify using commonly available data. As Sullivan and Wurzer (2009) point out, it is not clear how the value of intangibles should be measured in principle, as not even value itself is a clearly defined concept.

### 2.1. Macroeconomic level

On a macroeconomic level, Hall (2001a,b) estimates the net value of intangibles by the residual of the difference between the aggregate debt and equity market values of firms and the total (book) value of tangible assets. However, especially on firm level this notion is difficult to reconcile with the dramatic fluctuations of stock prices for example seen during the boom and burst of the dot-com bubble. Another macroeconomic approach to measure the value of intangibles is undertaken by Corrado et al. (2005), who divide intangible assets into different categories and provide either data or proxies to quantify the asset values.

### 2.2. Firm level

Ultimately, we would like to obtain a value of intangible assets that can be related to the values of other asset classes on the balance sheet. While Compustat's data item *intan* fulfills this criterion partly, it is important to point out that it only contains a small fraction of firms' intangible value. An alternative is given by measures that provide insight into the intangible intensity gained from other observables on the financial statements. First, R&D expenditures proxy for spending on new intangibles. Second, the number of patents and trademarks gives an indication of firms' intangible intensity in the past. Third, an analysis of firms' earnings and other indirect measures allows us to make conclusions on the productivity of existing intangibles. We exploit the latter when proposing our new measure of intangible intensity in Section 3.

#### 2.2.1. Intangibles and tangibles on the balance sheet

Some intangibles are captured on the balance sheet and reported in Compustat's data item *intan*. The item's most notable feature is the large number of zeros and missing values.[2] For the remaining firm-years with positive *intan*, the ratio of

[2] Taking a post-1985 sample of firm-years excluding only financial firms (6000–6999) and regulated utilities (4900–4999) yields a sample size of $N = 259{,}056$ firm-years. Out of these firm-years, *intan* is reported to be equal to zero for 85,426 firm-years (approx. 33% of the sample), while *intan* is missing in 62,616 firm-years (approx. 24% of the sample). This leads to only 111,014 firm-years with positive *intan*.

Download English Version:

https://daneshyari.com/en/article/5093228

Download Persian Version:

https://daneshyari.com/article/5093228

Daneshyari.com