

## **The Size and Sign of a Spillover Effect of Organization Capital**

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In recent years, there is an increasing interest in intangible capital and its impact on the growth of firms, industries and countries. Of the different types of intangible assets, organization capital, such as brand equity and on-the-job training, is often found to be the most significant contributor to corporate performance and broader growth (Arthur, 1994; Black and Lynch, 2005; Lev and Radhakrishnan, 2004; Corrado, Hulten and Sichel (CHS), 2006). However, despite the amount of research on the role of organization capital in growth, the potential spillover effects have not yet received much attention, unlike the vast amount of research on R&D spillovers. To fill this gap, the current paper examines three major questions: 1) is there a spillover effect of organization capital? 2) If so, is this effect positive or negative? And 3) does this effect vary systematically across industries? This is of great interest for the growing literature that integrates intangible capital in a growth accounting framework since my analysis will allow us to contrast the firm's private return to investments in organizational capital with the social return to the economy. This can help inform some of the more ad-hoc choices made in intangible growth accounting. The research can be of broader and even managerial interest by relating the presence of spillovers to industry characteristics.

To address these research questions, it is important to first define and measure organization capital. Although there is not yet a consensus definition of what organization capital is and how it can best be measured, this paper opts for the approach of CHS in relating organization investment to firm spending on training, advertising, etc. More specifically, I follow Lev and Radhakrishnan (2004) by using a fraction of selling, general and administrative (SG&A) expenses as a proxy for investment in organizational capital. These expenses are widely available from corporate financial accounts, alongside R&D spending and more traditional inputs such as labor and tangible capital. The impact of organization capital (and other inputs) on firm output can then be established through the estimation of production functions, including organization capital of related firms to establish the size and sign of any spillovers. In this, I will follow along similar lines as the much broader literature on R&D spillovers (e.g. Griliches, 1991; Keller, 2004; Bloom, Schankerman and van Reenen, 2010).

In addition, with multiple industries included, this paper also examines whether organizational spillovers vary systematically depending on the features of each industry. For instance, there are more inventions and new technologies in more R&D-intensive industries. In such industries, with many new products/technologies entering the market, firms need to spend more internally on training its employees to familiarize with the products they are selling and externally more advertising is needed to introduce the products/technologies to the potential customers. As a result, both the direct effects and spillovers of organization capital would vary depending on the R&D intensity of the industry. I will also consider alternative industry characteristics, such as

market structure since, for example, investments in brand equity will likely have a different impact depending on the intensity of competition amongst firms.