

The Impact of Technological Innovation and Knowledge on the Market Value of Quoted Firms - Evidence Using Data on Finnish and Swedish Firms

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This study examines the impact of technological innovation and knowledge on the market value of publicly traded firms. Patents and patent citations are used as indicators of firms' technological innovation and knowledge stock. The main objective of this thesis is to study the extent to which patents and citation-weighted patents function as proxies for technological innovation and knowledge, and how stock market investors value these assets. Patents granted by the USPTO are studied, and citation-weighted patent stocks are constructed in order to decrease the considerable heterogeneity in the importance and economic value of patented innovations. The studied sample comprises all major Finnish (30) and Swedish (50) manufacturing firms with patenting activity, and the time period 1984-1999 is examined. Finnish and Swedish firms are studied since these two countries are well-known for their state-of-the-art technology and knowledge

The estimated models in the empirical study are conducted following the pioneering study by Hall et al. (2000), applying Tobin's q theory. Specifically, the models measure the impact of firms' intangible innovative capital, in relation to their tangible assets, on the market value. The examined models are estimated with the Ordinary Least Squares- and the feasible Generalized Least Squares estimation techniques. In addition to the models used in previous studies a dynamic model is estimated employing instrumental variable estimation (GMM).

The obtained results indicate that both patents and citation-weighted patents significantly influence corporate market value. Thus, patents and patent citations seem to be excellent indicators of technological innovation and knowledge, and these assets appear to be highly valued by stock market investors. Unexpectedly, the results indicate that patent citations do not improve the explanatory power of patent stocks on firms' corporate market value. Consequently, patent citations do not add significance to patents' impact or correlation with corporate market value for Finnish and Swedish firms.

The examined firms are classified into eight industries. The results imply that patents influence corporate market value most significantly for firms in the telecommunication- and electronic industry, and in the chemical- and pharmaceutical industry. Furthermore, firms' market values in the classification for other industries also appear to be highly affected by patents and citation-weighted patents. Pioneering results concerning time trends in the impact of technological innovation on corporate market value are found. The findings imply that patents and patent citations have a significant influence on market value during the whole studied time period, apart for the first few years of the 1990s. During these years both Finland and Sweden suffered a severe economic recession. Thus, economic recessions appear to affect the impact of technological innovation and knowledge on corporate market value.

A comparison between Nokia's and Ericsson's patenting activity is furthermore analysed in a case, using the comprehensive NBER patent data base.