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Investor perception and business method patents: A natural experiment

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ABSTRACT

The 1998 State Street Bank & Trust Co. v. Signature Financial Group court case is largely responsible for opening the door on the issuance of business method patents, while the 2008, *in re Bilski* decision closed it (at least partially) once again. The result of the first decision was a significant increase in the number of patents issued and law suits filed for infringement. This paper is the first the authors are aware of to utilize these court cases as natural experiments to gauge investor belief regarding the utility of business method patents on publicly traded companies. We find that investor beliefs about the effect of business method patents on company value evolved between 1998 and 2008, as investors modified their expectations for the effects of the *in re Bilski* decision based on what actually occurred after the State Street decision. We also find that investor sentiment varied by industry subsector. Our findings offer insights into the ongoing debate over the utility of business method patents, which may inform managers, investors, and both statutory and regulatory policy makers.

1. Introduction

Governments grant patents to increase social welfare by encouraging useful innovation. The patent system is designed to encourage innovation in two ways. First, innovators are encouraged to devote the necessary resources by gaining exclusive rights to their innovation for a set period. Second, after this protected period has expired, the innovation becomes public property, expanding the general knowledge base and encouraging derivative innovation. The effectiveness of specific patent policy has been the subject of continual debate and study (Machlup and Penrose, 1950; Spulber, 2011). Until 1998, United States Courts had interpreted patent legislation to exclude business processes (Melarti, 1999).

On March 9, 1993, Signature Financial Group, Inc. was granted US patent 5,193,056 entitled "data processing system for hub and spoke financial services configuration". Signature had patented a process for streamlining their data processing. State Street Bank & Trust Co entered negotiation with Signature Financial to use this innovation. When negotiations broke down, State Street brought a declaratory judgment action asserting invalidity, unenforceability, and noninfringement, and

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then filed a motion for partial summary judgment of patent invalidity for failure to claim subject matter encompassed by Title 5, Section 101. State Street asked the United States District Court for the District of Massachusetts to overrule the patent office and declare the patent invalid because previous courts had ruled that business processes were not patentable. The motion was granted by the District Court in 1996. The district court concluded that the claimed subject matter fell into one of two long held alternative judicially-created exceptions to statutory subject matter: the "mathematical algorithm" exception or the "business method" exception. The District Court cited over 20 cases from other District Court Cases and the US Supreme Court which they felt established a precedent banning business process patents (State Street Bank & Trust Co v, 2016).

Signature appealed to The United States Court of Appeals for the Federal Circuit, and on July 23, 1998, the appeals court unexpectedly overturned the lower court and held Signature's patent valid. The ruling was unexpected because many prior court rulings had held business processes to be nonpatentable, and courts rarely fail to follow such legal precedents (Hall, 2003; Dreyfuss, 2000; Fazzio, 2005; Cohen and Lemley, 2001; Allison and Tiller, 2003; Encaoua et al., 2006). As Landes and Posner (1976) explain, "a series of related [court] precedents may crystallize a rule having much the same force as a statutory rule". Strauss (1996) adds "well established precedents…are every bit as much a part of the [United States] Constitution as the most explicit textual provision". In its ruling, the court said, "We hold the transformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price, constitutes a practical application of a mathematical algorithm, formula, or calculation, because it produces 'a useful, concrete, and tangible result'". (United States Court of Appeals for the Federal Circuit (96-1327)). Per Lerner (2002), "The case was interpreted as unambiguously establishing the patentability of business method patents".

At the time of the State Street decision, there is no evidence that State Street Bank & Trust Company was planning an appeal (based on a search six months before and six months after the decision using Business Source Complete, LexisNexis, and Factiva examining case studies, academic journals, law reviews, conference proceedings, working papers, company reports, trade publications, periodicals, editorials, etc.) In an article in The New York Times, Riordan (1998) argued that an appeal was unlikely as the Supreme Court had not ruled on this type of case for 17 years (since 1981 Diamon V. Diehr). Later that year, Roberts (1998) laid out a more detailed set of reasons for believing that the State Street decision would not be appealed. These reasons include limited grounds for an appeal based on prior case law, that the time involved in an appeal would lessen the value of the patent at issue making the appeal financially unattractive, and the fact that State Street Bank had itself begun filing patents for business processes.

Theory has held that patents on financial innovations and processes would maximize total economic welfare. However, many researchers, including Anderson and Harris (1986) and Tirole (1988), postulate that the practical result might be an arms race that saps the resources of all parties, lowering social welfare. The resulting furor over the court's decision to validate business method patents is best summarized by Merges (1999): "We may see an explosion of activity. Or we may hear horror stories about good, solid businesses abandoned in the face of predatory patent extortionists. It is simply too soon to tell". This unexpected reversal of long held judicial precedence offers a natural experiment to determine whether the market believed, a priori, that allowing companies to patent business processes would benefit these firms or harm them.

In their 2008 *in re Bilski* decision, the US Court of Appeals for the Federal Circuit narrowed the effect of the State Street decision. While this decision did not eliminate business method patents, it held that the test of patentability in the State Street decision was too broad and should not be relied upon. The press widely reported the demise of the business method patent in articles with headlines such as "Court Rules Business Concept Cannot Be Patented" (The New York Times, 2008) and "Your Business Method Patent Has Just Been Invalidated" (The Washington Post, 2008). Thus, the *in re Bilski* decision serves as a further test of the expectations of investors on the impact of business method patents on the value of publicly traded companies.

When the US Court of Appeals for the Federal Circuit ruled *in re Bilski* on October 30, 2008, it was widely expected that Bilski would appeal the decision to the Supreme Court (Bartz, 2008a,b). They did so, arguing their case on November 9, 2009, with a decision being handed down on June 28, 2010. The Supreme Court affirmed the judgement of the appeals court (though it revised many of the specifics of its rulings). We have chosen to use the decision date of the appeals court as our event date because it was widely reported as being the end of business process patents in the United States (The Associated Press, 2008; Schonfeld, 2008). In addition, the appeal resulted in the lower court being upheld, and there was a two-year delay between trials.

There are two ways that these matching court decisions can be used to shed light on the debate over the social utility of business process patents. The first is to try to directly measure the actual economic impact of business process patents. Merely counting the number of business process patents before and after each court decision would be insufficient. An increase in the number of business process patents granted could indicate their economic validity (Merges, 1999) or could indicate an arms race of defensive patenting that saps the resources of all parties, lowering social welfare (Anderson and Harris, 1986, and Tirole, 1988). Examining the impact of individual patents or even the impact on individual companies would also be insufficient. To be effective, we would need to also examine the impact on that company's competitors and customers (Mullin et al., 1995). Further, we would need to estimate the social welfare generated over time by the increase in society's knowledge base as the details of the innovation are made public and eventually enter the public domain when the patent expires (Mazzoleni and Nelson, 1998). These difficulties are compounded by the fact that there is a significant lag between the time the courts changed the relevant law and the resultant change in the number of business process patents granted. This is due to the long lead time necessary to ramp up R&D and negotiate the patent process. This lag is six years