

The Patent Explosions: Quantifying Changes in the Propensity to Patent

Paroma Sanyal, Brandeis University
psanyal@brandeis.edu

This paper contributes to the existing literature on the drivers of patent applications and grants by investigating possible drivers on patent grant rates and their associated impact on patent volume and quality. It builds on the work by Kortum and Lerner (1998) by focusing on the 'friendly-court' hypothesis as a possible explanation for the patent surge in the mid-1980s. In addition, it adds a necessary piece to the literature by focusing on the 1990 changes in the US IPR regime as well. During the early 1980s, the creation of the Court of Appeals of the Federal Circuit and its patent friendly stance, the passing of the Bayh-Dole Act and increase in the scope of patent subject matter vastly increased the probability of obtaining and protecting a patent in the US, and consequently decreased the net-cost of patenting. Changes in the early 1990s made the USPTO more customer-friendly and had adverse impacts on grant standards.

This paper develops a sequential application-grant framework to analyze competing explanations for the two U.S. patent surges during the mid-eighties and early nineties. I argue that if the 1980s changes were responsible for the mid-eighties patent surge then one should observe increased patent grants which cannot be explained by observed factors such as increase in the proportion of informed inventors in the economy, increase in inventiveness as evidenced by signal about invention quality and changes in application probability of uninformed inventors. Following Kortum and Lerner (1998), I call this the 'friendly court' hypothesis. If this is indeed responsible for the increased patent grants, one should also observe an increase in the variance of patent quality for English-speaking countries. In addition, grant share of small inventors should increase after law change relative to corporations. Overall, I tend to reject the '*friendly court*' hypothesis as the primary cause of the eighties patent explosion.

I find evidence of increases in world inventiveness (as captured by the signal quality variable) positively influencing patent grant rates. In addition, increase in the proportion of informed inventors increase grants rates while an increase in the probability of application by uninformed inventors decrease grants rates. Small inventors or English-speaking countries are not at a special advantage nor does patent quality variance increase after the 1980s law changes. Based on this evidence, I reject the '*friendly court*' hypothesis as the primary cause of the patent explosion, providing additional evidence in support of the Kortum and Lerner argument (1998).

In addition, if the *regime laxity* hypothesis was responsible for increased grants during the 1990s, one should observe positive and significant impacts of year unobservables on grant rates. Also, patent quality variance should increase further and the variance for non-English speaking countries should increase compared to the pre-law change levels. Here, the empirical evidence is more mixed. I find that the *regime laxity* hypothesis is rejected based on the patent grant rate and the English versus non-English speaking country variance models. In addition, increase in the proportion of informed inventors has a stronger impact on the grant rate after the 1990s and variance decreases as signal quality increases post-regime change. However, there is also evidence that these IPR changes increased overall quality variance. Therefore I argue that the patent surge of the 1990s may be have been cause by both, an increase in the proportion of informed inventors producing very high quality patents (leading to an increase in the quality variance) and the customer-friendly patent regime. The '*friendly court*' hypothesis can be largely rejected as a primary explanation for the mid-eighties patent surge, as well. Evidence from the variance equations points to changes in unobserved invention potential factors as possible drivers of this surge.