

Do courts decisions affect innovation activity?

Research Question

With many theoretical frameworks and empirical studies, it was determined that institutions have a significant impact on the social well-being and economic outcomes. One of the key features of institutions that do matter are property rights and intellectual property rights (IPR), in particular. In this research I am going to investigate a micro-mechanism, through which the laws, protecting IPR, could affect incentives of inventors and innovators. Within the following setting, it is going to be estimated how the number of new patent applications depends on the proportion of cases won by patent holders.

Motivation

Laws in the field of IPR are constantly developing, especially in the last decades. On a data of 60 countries Josh Lerner clearly demonstrates that the number of policy reforms and the amount of issued patents have been growing for more than 150 years.¹ In a paper of Lee Branstetter (2011)² it was shown an impact of IPR reform on industrial output after the reforms in a several countries in 90s. The analogous result is demonstrated with example from China.³ The researchers estimated the effect of the reforms of 80s and 90s on the volume of innovations with a series of probabilistic models. Simply saying, reforms are significant determinants of innovative expansion.

Coming back to micro perspective, it would be interesting to identify a specific channel of influence, through which adopted laws affect number of patents. Mostly, the previous empirical works concentrated on technological transfer within multinational companies.⁴ However, I haven't seen any works, which investigated the scale of the direct effect on potential patent applicants. I suppose that one of the main channel for innovators is the confidence in the future. If an innovator witnesses that the laws are working and the property rights are defended, he will be more willing to create and use patents as a guarantee for "larger share of the benefits of his invention".⁵ Leading by this intuition, I formulated the following design.

Research Design

A. Data construction

Since the US data bureaus have the most complete and detailed data, I decided to concentrate on this country. The final dataset would be a panel from 1990 to 2014, consisting of data from

¹ Lerner, *The empirical impact of intellectual property rights on innovation: Puzzles and clues*

² Branstetter et al. *Does intellectual property rights reform spur industrial development?*

³ Yueh, *Patent laws and innovation in China*

⁴ Branstetter et al. *Do stronger intellectual property rights increase international technology transfer?*

⁵ Mokyr *Intellectual property rights, the Industrial Revolution, and the beginnings of modern economic growth*

two primary sources. The first one, provided by United States Patent and Trademarks Office (USPTO), contains an annual information of applications, issued and in-force patents by application status, disposal type and NBER sub-category. The second one is a combination of several data sources (WikiSource, Wipo and others) of patent, trademark and copyright cases law with a known outcome. I should notice that the reason why I resort to non-unified source is that the site of the US courts does not provide such information at this level of detail. But still, from the first estimates the cases dataset has more than 60 observations, which seems to provide an appropriate variation. Using this data, I calculate the variable of interest, which is the share of cases won by patent holder.

After that I am going to add several proxies of technical progress, which generally affects the number of patents in a specific year. From my point of view, there are two candidates. Firstly, R&D personnel should be added, because innovators are the ones who apply for a patent and directly affect its total number. Secondly, the volume of research grants. Intuitively, there should be high correlation between the variables. I also add series of proxies for macroeconomic development. This will help to clean the effect of the courts from the general situation in the country. Finally, I am going to saturate the model with time-variant fixed effects.

B. The equation

The basic configuration is below. Within the basic configuration the effect of interest would be estimated with OLS regression.

$$P_t = \alpha_0 + \alpha_t + \beta_t Share_t + \gamma_t X_t + \epsilon_t(1)$$

P_t - number of patents in year,

$Share_t$ - share of positive cases i ,

X_t - vector of control variables,

α_t - time-fixed effect.

C. Strengths and weaknesses

Several problems arise within this design. Firstly, reverse causality problem may take place. It can be addressed by shifting P_t to P_{t+1} . It seems sufficient, because it is hard to imagine the effect of future number of patents on the share of won cases today. Meanwhile, the opposite direction is quite credible. Secondly, omitted-variable-bias is inevitable, since there can be unobservable variables affecting the parameter. Finally, the process of collecting the dataset of cases law is imperfect. This can lead to the loss of some cases from the selection.

Work cited:

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