

An Empirical Approach to Estimating the Innovative Response to Patent Duration in the Pharmaceutical Industry

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The pharmaceutical industry is one of the most dependant on patent protection for revenue. It thus makes an ideal venue to study the effects of changes in patent protection. In particular, in this paper I seek to empirically estimate the change in innovation in response to changes in patent duration. Gaining an estimate of this parameter is crucial to understanding how to optimally structure patent protection. In order to do so I make use of the TRIPS agreement, which changed patent duration from 17 years measured from grant date to 20 years from application date. The structure of the law change means that there will be a heterogeneous impact on expected duration, depending on the type of patent class. Assuming innovation is responsive to patent protection, one would expect those classes of pharmaceuticals that receive the longest patent term extension to see the greatest increase in production. In order to measure patent value, I have assembled a novel data set on pharmaceuticals at the individual drug level, containing data on revenues, patents, and equity prices of the parent company. In this way I am able to obtain multiple measures of patent value, from revenues, market valuations, and patent citations. Besides gaining an estimate of the response of innovation to patent duration, the multiple measures of patent value will allow for a better calibration of patent citations as a measure of value.