

The Effect of Tax Avoidance Crackdown on Corporate Innovation

BY QIN LI, HONG KONG POLYTECHNIC UNIVERSITY; MARK (SHUAI) MA, UNIVERSITY OF PITTSBURGH; AND TERRY SHEVLIN, UNIVERSITY OF CALIFORNIA, IRVINE

The past three decades have witnessed significant increases in corporate tax avoidance at both the state and federal levels. U.S. firms utilize one of the most important tax avoidance strategies, which involves extensively using intangible assets to shift taxable income from high-tax areas to low-tax areas to reduce income taxes. To combat such income-shifting behavior and crack down on tax avoidance, more than 20 U.S. state governments have adopted addback statutes that specifically target tax-motivated income-shifting transactions that use intangibles. These statutes require firms within the adopting state to add back intangible-related expenses paid to related parties in other states to their state taxable income. For example, Connecticut adopted an addback statute in 1999. That means if a firm's subsidiary in Connecticut pays royalty fees for using patents

held by a subsidiary in another state that does not tax intangible income, the firm needs to add the royalty fees to the taxable income reported in Connecticut. Thus, these provisions are expected to effectively limit firms' ability to avoid paying state income taxes by preventing them from using intangible assets to shift income across states. Different state governments adopted the addback statutes at different times, providing a powerful setting for examining the economic consequence of this tax policy.

In this study, we analyze a possible negative consequence of addback statutes. Specifically, we examine whether the adoption of addback statutes by U.S. state governments impedes corporate innovation and, if so, whether the magnitude of this effect is economically important. As discussed, intangible assets play an essential role in corporate tax avoidance. The crackdown on tax-motivated income-shifting transactions



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using intangibles reduces the projected after-tax net present value of innovation projects. This may discourage firms from engaging in innovation activities.

Our empirical analyses employ a sample of U.S. firms from 1997 to 2005. To measure a firm's innovation, we rely on the count of utility patents. This output measure comprehensively captures both observable and unobservable inputs into innovation. We expect a more innovative firm to create and file more patents. After controlling for other determinants of corporate innovation, we find that the adoption of an addback statute in a state leads to a 4.77 percentage point decrease in the number of patents filed by a firm with material subsidiaries in that state. The decline in patent count is consistent with the predicted negative effect of the addback statutes on innovation.

Prior studies suggest that the number of patent citations reflects the quality of a patent. If total citation count does not change, the decrease in the number of patents does not necessarily indicate a drop in a firm's innovation; therefore, we also measure innovation based on the total number of citations that a firm receives on its patents. We find that after a state adopts an addback statute, the total number of citations received on patents filed by affected firms also significantly decreases by 5.12 percentage points. Together with the patent count test, the negative effect on patent citations lends further support to the idea that the addback statutes have a negative effect on corporate innovation.

The economic implications of the declines in patents and citations rest on the value of the disappearing patents. To shed light on this issue, we test the effect of the addback statutes on the aggregate value of patents filed by affected firms after the adoption. We measure the value of patents based on stock market reactions to patent grants, and the change in the aggregate value reflects the economic value of the disappearing patents. We find that the adoption of the addback statutes significantly decreases the aggregate value of the patents. Moreover, when we classify patents into two groups based on whether a patent has any citations, we find that the addback statutes reduce not only patents without citations but also patents with citations. Furthermore, we do not find a significant change in the average number of citations per patent after the adoption of addback statutes. Thus, the patents that disappear because of the addback statutes have economic value and do not seem to be of lower quality than other patents.

We then consider the location of patents. Prior to the adoption of addback statutes, a firm could lower tax expenses by assigning patents to a state that does not tax intangible income. Subsidiaries in high-tax states would then pay royalties for using the patents, shifting income to the zero-tax state. Addback statutes require the payee to add back the royalty expense to its state taxable income. Thus the firm can no longer avoid paying taxes in the high-tax state with addback statutes by assigning a patent to a zero-tax state. Further, to avoid double taxation, most states provide an exemption to addback statutes when the royalty payment is subject to taxation in another state. Because of this exemption, the amount of income tax that the firm pays is the same no matter whether the patent is located in a state with addback statutes, a no-tax state, or another state with a similar tax rate. We therefore expect states with addback statutes to reduce firms' incentives to locate their patents in zero-tax states. We identify the location of patent assignees from the U.S. Patent and Trademark Office's patent assignment data. Indeed, we find that the adoption of an addback statute reduces the number of patents that the firm assigns to subsidiaries in states with no taxes on intangible income. In contrast, we do not observe a significant change in the number of patents that the firm assigns to other non-zero-tax states. These findings lend further support to the argument that the addback statutes limit firms' use of patents in zero-tax states for tax-motivated income shifting.

We provide several additional tests. First, we do not find more-pronounced effects of the addback statutes on corporate innovation for firms that are more financially constrained. Second, in a subsample of firms that are not financially constrained, we still find that the addback statutes significantly reduce innovation. These two sets of findings rule out the alternative explanation that the effect on innovation is simply due to the crackdown on tax avoidance increasing firms' financial constraints and thus reducing their investments in innovation activities. Third, we also conduct tests to mitigate concerns about possible confounding effects of other tax policy changes and state-level economic conditions. In particular, we do not find that state economic conditions predict the adoption of addback statutes. Also, the adoption of addback statutes rarely coincides with other changes in state tax policies. Fourth, we do not find significant changes in international

income shifting or the number of patents assigned to foreign subsidiaries after the adoption of addback statutes—this disproves concerns that firms shifted patents to foreign countries for federal or foreign tax avoidance instead of using them to avoid state taxes. Fifth, we find that state corporate income tax revenue significantly increases after the adoption of addback statutes. This result shows that the addback statutes are being effectively enforced and are increasing firms' tax burdens.

Overall, our findings suggest that the adoption of add-back statutes impedes corporate innovation by significantly reducing a firm's innovation behavior. Thus, our findings provide more information on the effect of tax avoidance on firms' activities.

We believe that our study informs policymakers who are interested in the consequences of regulations that constrain tax-motivated income shifting (i.e., base erosion) using intangibles. The Tax Cuts and Jobs Act (TCJA) of 2017 also

includes a provision to stop base erosion that is somewhat similar to addback statutes in that it aims to constrain tax-motivated income shifting by U.S. multinational firms to foreign countries with low taxes. This provision calculates an alternative taxable income by adding back to U.S. taxable income specified outbound payments to foreign related parties (i.e., foreign subsidiaries). Our study may help policymakers understand the net benefit of this tax provision. We encourage future research to directly examine the effect of the TCJA provisions on corporate innovation.

NOTE

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