THE INTENSIVE AND EXTENSIVE EFFECTS OF TAX HOLIDAYS

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Problem Statement
Oil production rents have long been a target for taxation. U.S. states are the primary taxing authorities in the form of severance taxes, and the federalist structure provides rich cross-sectional and time series variation. One curious feature of many state tax regimes is temporary reductions in tax rates for new investments in oil wells. Tax incentives are commonly used to attract fixed investments in other many other contexts and there is some debate about their effectiveness. Oil and natural gas production are more restricted in locational choice because of the need to locate adequate natural deposits. This paper examines the tax holiday structures in an attempt to answer the following questions. Do severance tax holidays increase investment in new oil wells, and if so, how sensitive are investments to these incentives? Do tax holidays lead to increased oil production? What are the fiscal implications of offering severance tax holidays for taxing authorities?

Background
Taxing oil and natural gas production distorts extraction incentives, but many producing states rely heavily on revenue. Because production is relatively inelastic, such taxes may be relatively attractive from an efficiency standpoint. A variety of tax structures have been employed to yield revenue, including windfall profits taxes when oil prices change (Rao 2018). Several U.S. states offer oil and gas producers temporary reduced severance taxes for qualifying investments. In many cases these reductions target unconventional wells. This study focuses on the dynamic effects of these tax structures on both a production and an investment margin.

Bond (1981) provides a baseline model of tax holidays, with an emphasis on output during the period the holiday is in force. In the case of oil and gas development, this model is extended to include an objective of maximizing the amount of investment during the period of the holiday.

Methods
Variation in tax holiday regimes across states, within states over time, and within states across qualifying and non-qualifying investments at the same time are all possible. Empirically, the work relies on taking a panel of state oil and gas production data and matching it with information on tax holidays for severance taxes. Six states have been identified that offer severance tax holidays for qualifying wells. The outcomes of interest are drilling investments, production outcomes, and tax receipts. Panel econometrics are the primary method used, fully exploiting temporal variation as tax treatment changes. Geographic variation is also relevant, using static difference across regimes providing access to comparable resources, such as nearby wells across a state border.

Outlook
This work is underway but preliminary results indicate that extensive effects dominate intensive effects, and that fiscal impacts are negative when limiting the comparison to severance taxes alone and using low discount rates. This stems from the relative inelasticity of production. However, extending the fiscal evaluation to include other types of taxes, such as payroll and sales taxes, may provide a more comprehensive and more favourable assessment of tax holidays.

References