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On interjurisdictional competition and environmental federalism

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Abstract

Herein we construct a competitive interjurisdictional model that reconciles two recent exceptions to the *race to the bottom* (J. Publ. Econ. 35 (1988) 333–354; J. Urban Econ. 37 (1995) 290–310). Our results suggest that since environmental rents from local production are likely not captured 100 percent by local residents, devolved command and control environmental regulation is inefficient. Moreover, faced with the reality of fiscal constraints, local governments adopt property tax structures that serve to compound inefficiencies. Within such a 'second best' setting, if a jurisdiction underprovides non-environmental public goods and jurisdictional capital productivity and emissions are strong complements, a race to the bottom equilibrium is supported.

JEL classification: H71; H73

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1. Introduction

The appropriate role of the various levels of government in the setting of tax policy and environmental standards remains a central but unresolved public policy question. One potential

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outcome of devolved authority is that local governments over-compete for industry by underproviding localized public goods with lower taxes, lax local environmental standards, or both (see [10,11] for more on this "race to the bottom" behavior).[1] Two recent papers, however, present well-received exceptions to this reasoning. Oates and Schwab [12] (Oates–Schwab) argue that 'small' homogeneous jurisdictions' decentralized choices are likely to be socially optimal because each locale (i) sets what would otherwise be distortionary capital tax rates to zero (in the presence of lump sum taxation), and (ii) sets environmental standards to equate marginal benefits with the incremental costs. Efficiency exists within the Oates–Schwab competitive homogeneous model, however, because they implicitly internalize the pollution externality by distributing pollution rents back to immobile residents of a jurisdiction through their wage equations. This arbitrary rent distribution rule parallels a perfect Pigovian remedy and confounds the supposed aggregate command and control strategy for environmental protection (see [7] for a critique).[2]

In contrast, Wellisch [18] recognizes that pollution rents are not likely confined to local jurisdictions—rather the rents are captured by firms that locate where these rents are the highest. He concludes decentralized command and control regulation leads to the *overprotection* of the local environment. This equilibrium arises because pollution rents go to firms owned mostly by non-residents. Locals now bear the entire burden of the pollution externality and gain few benefits in return. In effect, devolved command and control standard setting is inefficient but in the "right direction" for people concerned about enhanced environment quality. While Wellisch demonstrates that decentralized efficiency can be achieved by way of Pigovian remedies, he does not address the Oates–Schwab interrelationships created between the provision of non-environmental public goods and devolved environmental standard setting.[3] Here, it is important to emphasize that local environmental standard setting and tax policies are closely intertwined.

Neither view, however, explains the reality of recent situations like coal bed methane (CBM) development in Campbell County, Wyoming.[4] Officials in Campbell County (in conjunction with environmental authorities in the state) actively weakened standards for or provided minimal monitoring of saline, sodicity, arsenic, and barium levels in the water discharged from CBM wells drilled by mostly out-of-state owned firms (see [4]).[5] Why? Some observers argue lax standards

[1]Local governments are defined as counties, special districts, and metropolitan areas. See [12, p. 351].

[2]Oates and Schwab [12, footnote 2] also gives rise to this conflict.

[3]In [18] the jurisdiction sets firm-specific emission standards as opposed to the aggregate standard set in Oates–Schwab. Moreover, Wellisch does not consider non-environmental public goods provision in his analysis.

[4]Coal bed methane is natural gas found in coal seams—typically saturated with ground water. Extraction of the resource requires bringing large volumes of polluted water to the surface where it is generally discharged and allowed to pool in holding ponds.

[5]Between 1975 and 1999, about 200 discharge permits were issued annually; permits have increased to over 600 a year with the initiation of CBM. About 16,000 CBM wells have been developed in the Powder River Basin in Wyoming to date, and another 35,000 wells could be developed. The estimated amount of recoverable CBM from the Powder River Basin ranges from 8.24 to 22.42 trillion cubic feet of gas [17]. In response to this 'boom', Wyoming's Department of Environmental Quality (DEQ) has assigned *one* person to monitor compliance with water discharge permits. "That of course is a problem. There's a lot of activity up there, so that person is stretched pretty thin," said John Warner, administrator of DEQ's Water Quality Division (as quoted in [15]).

In addition to questions of monitoring, differences exist in Montana and Wyoming on the limits to the key environmental parameters in CBM discharge water. The Montana Board of Environmental Review formally approved rules in 2003, for example, the standard for the sodium absorption ratio (SAR) varies between 3.0 and 4.0 for the