Essays in Climate Change and Forest Management

av

Jiegen Wei

AKADEMISK AVHANDLING

**som med vederbörligt tillstånd för vinnande av
filosofie doktorsexamen vid
Handelshögskolans fakultet, Göteborgs universitet,
framlägges till offentlig granskning
måndagen den 6 april 2009, kl 10, i sal E-43,
Institutionen för nationalekonomi med statistik, Vasagatan 1**

Göteborg 2009

Abstract

This thesis contains four papers

Paper I analyses the exhaustion of oil resources, and the transition to a backstop technology as a strategic game between two blocks: the consumers and producers of oil which we simply refer to as "OPEC" and "OECD". The OECD has two instruments: it can tax fuel consumption and decide when to switch to the carbon neutral backstop technology. The tax in the OECD is found to serve the purpose to both reduce climate damage and to access some of the resource rent. OPEC on the other hand can retaliate by choosing a strategy of price discrimination selling oil cheap on domestic markets and of course they can implicitly determine the price and thus the timing of resource depletion. The results show that price discrimination enables OPEC to better avoid the adverse consequences from the tax and backstop technology in OECD by consuming a larger share of the oil in their domestic market.

Paper II studies the effects of reputation on compliance with social norms of behavior, and in particular, the role of information in mediating this relationship. A prevailing view in the literature states that social sanctions can support, in equilibrium, high levels of obedience to a costly norm. In contrast, the model introduced in this paper shows that imperfect observability causes the expected social sanction to be at its lowest precisely when obedience is more common. Unless actions are fully observable, society finds it hard to conceive that someone is in disobedience when disobedience is rare. In this line of argumentation, the failure of an environmental norm as an internalization mechanism can be explained.

Paper III uses forest data across 28 provinces during the reform period to examine some frequently discussed questions about macroeconomic and population impacts on the forest. The data support a theoretical argument for separating forests into four components, managed and natural forests administered by either state or private agents. Our regressions suggest as incomes rise, the natural forest is first drawn down then, when incomes rise above some level, the natural forest begins to recover. As incomes continue to rise, the managed forest eventually grows even more rapidly and offsets any continuing draw on the natural forest—with an aggregate impact of net expansion for all forests, managed and natural combined.

Paper IV uses firm level data in China's timber industry to evaluate the impact of manager turnover on firm productivity. We find that due to differences in selecting and screening manager candidates, the impacts of manager change on firm productivity are heterogeneous across ownership types. In state-owned firms, manager change is mainly driven by bureau leaders who may want to control the rent from firms and hence appoint new managers loyal to them. Consequently, deterioration of firm productivity can be observed following a change. For private firms, it is found that manager selection is based on the human capital of candidates. Therefore, firm productivity improves after a change. The results from both a regression analysis and a matching approach provide similar evidence.

Keywords: *Dynamic games; Stock externalities; Carbon tax; Social Norms, Moral Hazard, Environmental Regulation; Energy pricing; Chinese forests, Economic growth; manager turnover; ownership; selection of managers; firm productivity*

JEL: *D62; H23; Q34; Q54; Q52;H23;D82; Q23; Q28; P28; P34; P26; G34 ; P28*

ISBN: 91-85169-41-2 (978-91-85169-41-2)

Contact information: Jiegen Wei, Department of Economics, School of Business, Economics and Law, University of Gothenburg, Box 640, SE405 30 Göteborg, Sweden.
Email: Jiegen.wei@economics.gu.se