

Incentives and Forest Reform:
Evidence from China

Yuanyuan Yi

AKADEMISK AVHANDLING

**som med vederbörligt tillstånd för vinnande av
filosofie doktorsexamen vid
Handelshögskolans fakultet, Göteborgs universitet,
framlägges till offentlig granskning
fredagen den 16 juni, kl 10.15, i sal E44,
Institutionen för nationalekonomi med statistik, Vasagatan 1**

Göteborg 2017

Abstracts

Chapter I: Forest Devolution Reform in China: A Trigger for Investment or Deforestation?

I investigate whether and how the devolution of forestland to households in China triggered investment in forestland, and its effect on forest resource conditions. The investment analysis is based on a panel dataset of a two-round survey of 3,000 households in eight provinces before and after the implementation of the forest devolution reform, while the analysis of resource conditions is based on satellite imagery on forest cover and vegetation during 2001-2012. Using a difference-in-difference propensity score matching model, I find that the devolution reform resulted in more investment, in terms of annual labor input days and value of silvicultural treatments per area unit. At the county level, more forestland devolved to household management is found to improve forest conditions during the time period studied. I also investigate the investment effect through two channels: (i) the effect of tenure security, i.e., holding a forestland certificate and (ii) the reallocation effect from obtaining more forestland resources. The effects of devolution and improved tenure on increased private investment and resource conditions provide evidence that well-defined and protected property rights for households offer an effective alternative to common-pool resources management in small-scale forestry in China.

JEL Classification: O13, Q23, Q24, Q58

Keywords: forest devolution; household management; forest investment; deforestation; China

Chapter II: Allocative Efficiency or Agglomeration? The Emergence of Forestland Rental Markets and the Forest Devolution Reform in China

This paper evaluates whether the devolution reform of forestland to household management had an effect on allocative efficiency and household welfare through participation in forestland rental markets. Using a household panel dataset from three Chinese provinces, I find that the emerging forestland rental markets improved allocative efficiency in terms of factor equalization. With the reform, forestland is transferred to forestland-constrained and labor-rich households, and to households with higher levels of productivity in forestry. I do not find any support for agglomeration of forestland to land-richer, wealthier, larger or powerful households. Participation in forestland rental markets increases household per-capita income and decreases the likelihood of having an income below the poverty line.

JEL Classification: D61, O12, Q15, Q23

Keywords: allocative efficiency, household welfare, forestland rental markets, collective forest tenure reform, China

Chapter III: Managerial Incentives of Environmental Protection in Chinese-Style Federalism

China's fast economic growth has come at the expense of environmental quality and the degradation of natural resources such as forests. In this paper, we identify career concerns by managers of state-owned enterprises that manage natural resources, and asymmetric information between managers and their superiors regarding the enterprises' environmental performance, as sources of environmental degradation. A manager of such an enterprise is the agent of two principals: national and sub-national governments. As well as needing to meet ecological targets imposed by the national government, a manager wants to be promoted into the ranks of the sub-national government. We develop three hypotheses based on a theoretical model with two principals and one agent. We then empirically test these hypotheses for the case of China's northeastern state-owned forests, combining satellite imagery data on deforestation with economic survey data. Our findings suggest that managers of state forests that have a larger area and volume, and are thus more difficult to monitor with respect to ecological targets, log more timber and are more likely to deforest. The same holds true for managers who share a larger percentage of profits with the local government. In turn, we find that sharing more revenue with the local government increases the likelihood of getting promoted.

JEL Classification: H77, O13, O44, Q23, Q56

Keywords: managerial incentives; environmental protection; deforestation; state-owned forests; state-owned enterprises; Chinese-style federalism; two-principal, one-agent model

ISBN: 978-91-88199-19-5 (PRINTED) 978-91-88199-20-1

Contact information: Yuanyuan Yi, Department of Economics, School of Business, Economics and Law,
University of Gothenburg, P.O. Box 640, SE 405 30, Gothenburg, Sweden. E-mail:
yuanyuan.yi@economics.gu.se