

# **Essays on Team Cooperation and Firm Performance**

**av**

**Qian Weng**

**AKADEMISK AVHANDLING**

**som med vederbörligt tillstånd för vinnande av  
filosofie doktorsexamen vid  
Handelshögskolans fakultet, Göteborgs universitet,  
framlägges till offentlig granskning  
fredagen den 13 juni 2014, kl 10.15, i sal E43,  
Institutionen för nationalekonomi med statistik, Vasagatan 1**

**Göteborg 2014**

## Abstracts

### **Paper I: Cooperation in teams: The role of identity, punishment and endowment distribution**

Common identity and peer punishment have been identified as crucial means to reduce free riding and to promote cooperation in teams. This paper examines the relative importance of these two mechanisms under two income distributions in team cooperation. In a repeated public good experiment, conditions vary among different combinations of homogeneous or heterogeneous endowment, strong or weak identity, and absence or presence of peer punishment. We find that without punishment, strong identity can counteract the negative impact of endowment heterogeneity on cooperation. Moreover, punishment increases cooperation irrespective of income distribution. However, the impact of punishment under strong identity depends on the relative strengths of the identity-building activity and the effectiveness of punishment. Furthermore, we find no evidence of stronger punishment in teams with a strong identity. These findings provide important implications for management policy makers in organizations: implementing *ex ante* income heterogeneity within teams should be done with caution, and the decision of whether identity or punishment is a more effective norm enforcement mechanism in teams is rather sensitive to their interaction and relative strengths.

### **Paper II: Session size and its effect on identity building: Evidence from a public good experiment**

The effect of session size has largely been ignored in experimental studies, despite the possibility that it may affect people's perception of the strength of the potential link between them and consequently the strategies used in the interactions. This paper investigates how the effect of an induced common identity on individual cooperative behavior differs depending on session size in a repeated public good experiment with constant group size and partner matching. We find that induced identity significantly enhances cooperation only when the session size is small and only in the initial period. In all other periods, induced identity does not have a significant effect on cooperation in either small or large sessions. The same null effect of identity in small and large sessions suggests that session size is not a confounding factor of identity in repeated interaction settings.

### **Paper III: Multi-product firms, product mix changes and upgrading: Evidence from China's state-owned forest areas**

Product selection matters for a firm's productivity and long-run growth. Recent theoretical and empirical studies indicate that an important margin of adjustment to policy reforms is the reallocation of output within firms through changes in product mix decisions. This paper examines the frequency, pervasiveness and determinants of product-switching and upgrading activities in firms located in China's state-owned forest areas during a period of gradual institutional and managerial reforms (2004–2008). We find that changes to the product mix are pervasive and characterized by adding or churning products rather than only shedding products. Moreover, changes in firms' product mix have made a significant contribution to the aggregate output growth during our sample period. We also find that firms with different characteristics, human capital and market conditions differ in their propensity to diversify and upgrade product mix.

### **Paper IV: Is R&D cash-flow sensitive? Evidence from Chinese industrial firms**

We hypothesize that research and development (R&D) is sensitive to cash-flow fluctuations due to asymmetric information and agency problems in the credit market. We adopt a variant of the  $Q$  model for R&D investment using the value of the firm, physical capital and employment to capture firm fundamentals as proxies for investment opportunities. We add cash flow to this specification, and estimate the augmented model separately for R&D participation and spending using data on Chinese industrial firms for the period 2001-2006. We find that R&D spending is sensitive to cash-flow fluctuations, conditional on firm fundamentals. We also find that the cash-flow sensitivity of R&D varies across firms depending on ownership. We conclude that credit market imperfections pose a constraint for R&D in Chinese industry.

**Keywords:** cash flow, China, China's state-owned forest areas, cooperation, endowment distribution, firm characteristics, identity, identity building, multi-product firms, physical investment, product mix changes, product upgrading, public goods experiments, punishment, R&D, session size

**JEL classification:** C92, D22, D63, E23, G32, H41, L11, M54, O14, O32

**ISBN:** 978-91-85169-89-4 (printed), 978-91-85169-90-0 (pdf)

**Contact information:** Qian Weng, Department of Economics, School of Business, Economics and Law, University of Gothenburg, Box 640, 405 30 Gothenburg, Sweden. Telephone: +46 31 786 4669.

Email: qian.weng@economics.gu.se.