

# CCP Working Paper 06-11, 'A Test of Perpetual R&D Races': Summary

August 2006

A Test of  
Perpetual R&D  
Races

CCP Executive Summary

## Introduction

- In a number of industries firms compete by gradual innovation in perpetual races without clear finishing lines.
- Firms ahead in the race earn higher rewards than lagging firms, e.g. higher product quality might imply a higher price mark-up or larger market.

## Methodology

- The paper presents an experimental test of behaviour in R&D races.
- Traditionally, measuring strategic behaviour is difficult and thus attempts are often imprecise; also, R&D motivations are varied.
- This experimental approach addresses these problems by studying a controlled environment that measures strategic behaviour precisely; only one variable is changed at a time from race to race.
- Theory predicts two behavioural patterns: *reflecting* behaviour, where both R&D companies tend to stay in the race for an indefinite period, resulting in the leader being the first to give up exerting high effort, allowing the laggard to catch up; and *absorbing* behaviour, where the leader invests more than the follower, leading to an R&D leadership monopoly, entrenched leadership (the laggard is first to give up exerting high effort), and lower aggregate investment.

## Experiment Results

- Investment was high but seemed to decrease with experience.
- The greater the gap between R&D competitors, the lower the investment in R&D; however, the leader tends to invest more than the follower.
- The market tends to become an R&D leadership monopoly as the gap in relative position becomes greater.
- The perpetual race setting generally elicits a competitive mindset.
- Motivation is not always monetary with R&D teams; for example, rivalry concerns are a motive for innovation behaviour.

## Conclusion

- Strategic motives alone do not provide an adequate explanation for observed behaviour; specifically, behaviour was less context-sensitive than the theory predicted.
- Technological competition tended to evolve into an R&D leadership monopoly: a market structure with an entrenched leadership and lower aggregate investment than if competitors were to remain neck-and-neck.

## THE CCP

The ESRC Centre for Competition Policy (CCP), at the University of East Anglia is the leading UK Centre for research in the economics and law of Competition Policy. Its members undertake high quality, independent, academic research into competition and regulation and its impact on companies and society.

## FOR MORE INFORMATION

The full working paper (CCP Working Paper 06-11) and more information about CCP and its research is available from our website: [www.ccp.uea.ac.uk](http://www.ccp.uea.ac.uk)

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