

# CMPO Research Findings on Productivity in Public Services

## Introduction

CMPO research into this field is broad and wide-ranging. Topics that have been the focus of sustained research include:

- The role of competition and markets
- The use of performance management in the delivery of public services
- The impact of financial incentives for public service employees
- The role of private motivation
- Not-for-profits and interactions with the private sector

Empirical applications are drawn from a variety of fields, with a concentration on health care and education, primarily but not exclusively from the UK. Our focus is on establishing causality. To this end, we use a range of statistical methods, but many of our results exploit the natural experiments in UK policy which have introduced or removed competition, financial incentives or targets.

This brief provides an overview of empirical findings of our research, organized by the topics given above. Further details on all our work can be found at <http://www.bris.ac.uk/cmipo/>

## The key findings from CMPO research

### Competition and markets

Research on the role of competition in private sector markets has shown that European Union reforms to product markets under the Single Market Programme increased product market competition, which in turn led to increased innovation and total factor productivity growth in the manufacturing sector (Griffith et al. 2010). There is therefore reason to hope that competition may also be beneficial for public service markets.

Competition in healthcare can drive positive gains in productivity but the institutional arrangements matter. Evidence from the UK in the 1990s, where consumers and healthcare buyers had little or no information on hospital output or its quality suggests that competition leads to a focus on volume at the expense of (unmeasured) quality (Propper et al. 2004, 2008). Evidence from the 2000s, where competition was associated with greater information and prices were fixed suggests that competition increased quality (Gaynor et al. 2010); that removal of restrictions on choice sets for consumers and/or referring physicians increased sensitivity of sicker and poorer patients to quality (Gaynor et al. 2011); that greater competition led to better management practices which in turn increased the quality of public sector hospitals (Bloom et al 2010) and that mergers between UK hospitals did not increase productivity, imposed costs for consumers and were accompanied by poor post merger financial performance (Gaynor et al 2012). The gains from competition are not necessarily large, but many of the evaluations are simply of the introduction of competition/choice, so the long run effects could be much larger.

Turning to education, historically state-funded schools operated on a bureaucratic basis, with administrators assigning pupils to schools, and schools having little incentive to use resources

efficiently. Elements of competition have been introduced into this environment, through the separation of funding and provision. Parents choose schools and schools receive funding for each pupil they attract. The idea is for popular schools to grow and unpopular schools to close, mimicking the effects of true competition.

The results have been interesting, but rather disappointing. Finding a clear source of exogenous variation in competition is difficult and there are only two or three studies that do this for England. Burgess and Slater (2006) use the re-organisation of local authorities (LAs) to provide instances of reduced competition as some counties were split into smaller units (for example Berkshire became six new LAs). The results suggest at best a small and very weak effect on outcomes. The main effects are correctly signed but not significantly different from zero at conventional levels. There are hints of a small effect from sub-groups and also hints of an effect in other counties, but overall the impact is negligible. Our review of the evidence on competition (Allen and Burgess, 2010b) suggests that this finding fits well with the few other studies in England.

The interesting question is why there is so little effect. Most of the conditions for a successful market exist: (1) We know that revealed preference studies (Burgess et al., 2009a) and stated preference studies (Burgess et al., 2009b) show that parents value academic achievement; (2) school performance tables are informative on the high performing schools (Allen and Burgess, 2010); and (3) the per-pupil funding means that in principle at least, money follows the pupil. Ongoing research suggests that the issue is dysfunctional dynamics in the supply of school places (Allen and Burgess, 2012).

Most research has examined the relationship between product market competition and quality or output. Research on the impact of pay regulation of the UK healthcare markets has shown that regulation of the pay of inputs (nurses) reduces quality of output (Propper and Van Reenen 2010) and a similar effect is observed for teachers (Britton and Propper 2012).

### **The use of performance measures for accountability and targets in public services**

The UK government has made extensive use of performance management to increase the productivity of public services, despite the well known problems when organisations have multiple and hard-to-measure objectives.

Performance measures have been used as the basis of the accountability system in education. CMPO research has shown that getting the accountability system right is important and increases output.

In the context of education, the key performance metrics are the widely publicized school 'league tables'. These provide administrative accountability and also are the main mechanism through which market accountability is exercised via parental choice. An initial question is whether these tables are fit for purpose, whether they do in fact support parental accountability. Allen and Burgess (2010a) use seven years of pupil Censuses to show that they do. Using the performance tables to select schools does on average lead to better choices than choosing at random.

Does accountability, or the lack of it, matter for public service output? CMPO research has exploited the devolution of power over education to the Welsh Assembly Government to provide an exogenous change in policy (Burgess, Wilson and Worth, 2010). The Assembly immediately ceased the publication of school performance tables. This provides us with a unique setting to test the

hypothesis that the publication of school performance tables raises school effectiveness. Our data allow us to implement a classic difference-in-difference analysis comparing outcomes in England and Wales, before and after the abolition of the tables in Wales. We find significant and robust evidence that this reform markedly reduced school effectiveness in Wales. This is of the order of 2 GCSE grades per student lower in Wales. There is significant heterogeneity across schools: schools in the top quartile of the league tables show no effect. We also test whether the reform reduced school segregation in Wales, and find no systematic impact on either sorting by ability or by socioeconomic status.

Another element of the accountability system is the OFSTED system of school inspection, complementing the role of the performance tables. Allen and Burgess (2012) use a panel of schools to evaluate the effect of a school failing its inspection. We collect a decade's worth of data on how schools are judged across a very large range of sub-criteria, alongside an overall judgement of effectiveness. We use this data within a fuzzy regression discontinuity design to model the impact of 'just' failing the inspection, relative to the impact of 'just' passing. This analysis is implemented using a time-series of school performance and pupil background data. Our results suggest that schools only just failing do see an improvement in scores over the following two to three years. The effect size is moderate to large at around 10% of a pupil-level standard deviation in test scores. We also show that this improvement occurs in core compulsory subjects, suggesting that this is not all the result of course entry gaming on the part of schools. There is little positive impact on lower ability pupils, with equally large effects for those in the middle and top end of the ability distribution.

It is possible that performance targets may work where there is considerable consensus that performance needs to be improved. In health care, Propper et al. (2008, 2010) investigate this possibility by examining the response of the English National Health Service (NHS) to waiting time targets. Long waiting times have been a key issue for the NHS for many years. Using a natural policy experiment exploiting differences between countries of the UK, supplemented with a panel of data on English hospitals, we examine whether high profile targets to reduce waiting times met their goals of reducing waiting times without diverting activity from other less well monitored aspects of health care. Using this robust design, we find that targets led to a fall in waiting times without apparent reductions in other aspects of patient care. This suggests that well focused targets can bring productivity gains even where organisations have multiple objectives.

### **The impact of financial incentives for public service employees**

When the Blair administration came to power in the late 1990s, there was interest in the use of incentives for public sector employees to increase productivity. However, in practice the extent of experimentation in the use of such schemes was limited. But given that most of the evidence on the use of such schemes is either from the private sector or, in the UK, from the health care sector for public services, the limited evidence from the UK provides some of the few pieces of evidence on the use of P4P schemes outside health.

CMPO research examined two experimental team-based performance-related pay schemes for public sector workers. One of these was in the job placement agency of central government and one in the indirect tax collection agency. The findings were that the schemes did elicit greater output, but that there was evidence of free riding in larger teams (Burgess et al. 2011) and that teams increased their output through strategic reallocation of staff rather than greater effort (Burgess et

al. 2010). There are short run responses; the schemes were in place for long enough to examine longer run response.

Atkinson et al (2009) examined a performance pay scheme for teachers in the UK introduced in 2000. It was not a well-designed performance pay scheme, but nevertheless it did have an impact in the first few years at least. Many in the profession felt that the effect would be zero or even negative, but our results show a clear positive effect, increasing test scores by around half a GCSE grade per pupil for each teacher.

### **The role of private motivation**

A number of papers have posited that there is a relationship between institutional structure and prosocial behaviour, in particular donated labour, in the delivery of public services, such as health, social care and education. However, there has been very little empirical research that attempts to measure whether such a relationship exists in practice. Gregg et al. (2011) undertake such an examination using UK data. Including a robust set of individual and job-specific controls, we find that individuals in the non-profit sector are significantly more likely to donate their labour, measured by unpaid overtime, than those in the for-profit sector. We can reject that this difference is simply due to implicit contracts or social norms. We find some evidence that individuals differentially select into the non-profit and for-profit sectors according to whether they donate their labour.

Delfgaauw et al (2011) examine whether the presence of altruism has implications for the use of management practices developed in the private sector. Recent studies focusing on firms in the private sector have demonstrated the importance of good management for firm performance. Delfgaauw et al focus on management in not-for-profits (NFPs). Using a tried and tested survey of management practices, they find that NFPs score lower than FPs but also that this does not affect levels of performance (particularly quantity of output) in NFPs. One implication is that management practices that work for FPs may be less effective in driving performance in NFPs. This could be explained by sorting of workers endowed with ability and altruism across competing for and not for profit firms in the same sector.

### **Not-for-profits and interactions with the private sector**

The UK government has emphasized interaction between (not-for-profit) research institutions and business. Research has looked at the extent to which firms choose to locate their research and development (R&D) facilities near to universities and whether those that do are more likely to collaborate with them (Abramovsky et al. 2007, 2011). There is some evidence that highly-rated, frontier university research departments are associated with greater private sector R&D in the same geographic area. However, the evidence is limited to certain sectors, such as pharmaceuticals, chemicals and R&D services firms. For example, areas with world-class rated chemistry departments appear to have higher numbers of pharmaceuticals R&D firms, including foreign-owned firms which are likely to be highly geographically mobile. Science parks also appear to play a role in location decisions. These are often linked to specific universities which were involved in their establishment. But only in a few sectors, such as chemicals, is there evidence to indicate that proximity is associated with greater direct engagement with universities by private sector firms.

Research has also compared employment growth in the public, private and not-for-profit sectors (Cowley and Simpson, 2012). Using ONS data, this shows that over the period 1998-2009 growth in

employment in the not-for-profit sector has been strong relative to the public and private sectors. This appears to be driven by both higher net entry rates and net job creation rates. Developing improved measures of the services provided by not-for-profits and their performance is important if the sector expands within the economy, and for understanding what drives this growth and informing policy. Simpson (2008) provides a discussion of the measurement of productivity in sectors where output is un-priced.

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