



Does competition from private surgical centres improve public hospitals' performance? Evidence from the English National Health Service

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ABSTRACT

This paper examines the impact of a government programme which facilitated the entry of for-profit surgical centres to compete against incumbent National Health Service hospitals in England. We examine the impact of competition from these surgical centres on the efficiency – measured by pre-surgery length of stay for hip and knee replacement patients – and case mix of incumbent public hospitals. We exploit the fact that the government chose the broad locations where these surgical centres (Independent Sector Treatment Centres or ISTCs) would be built based on local patient waiting times – not length of stay or clinical quality – to construct treatment and control groups that are comparable with respect to key outcome variables of interest. Using a difference-in-difference estimation strategy, we find that the government-facilitated entry of surgical centres led to shorter pre-surgery length of stay at nearby public hospitals. However, these new entrants took on healthier patients and left incumbent hospitals treating patients who were sicker. This paper highlights a potential trade-off that policymakers face when they promote competition from private, for-profit firms in markets for the provision of public services.

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1. Introduction

In the 2000s, there was a widespread push in Europe and the United States to increase the role of user choice and provider competition in public services. In general, these pro-market reforms were designed to increase the quality and efficiency of public services like health care and education, which had previously been run through non-market means like performance management (Gaynor and Town, 2011; Propper et al., 2007, 2010). Often, as part of these market-based reforms, policymakers encouraged the entry of private, for-profit firms to compete against public sector providers. These efforts are exemplified by the growing use of charter schools in the United States and private health care providers in

publicly funded health systems in Western Europe (Jost et al., 2006; Fryer Jr, 2012). This paper explores how competition generated by the government-facilitated entry of private, for-profit firms affects the performance of incumbent public providers. In particular, we estimate the impact of the entry of a series of private, for-profit surgical centres in the English National Health Service (NHS). Policymakers steered the entry of these surgical centres to areas with high patient waiting times, with the aims of increasing surgical capacity and stimulating competition. We estimate the impact of this private provider entry on the efficiency of incumbent public hospitals, and examine whether it left incumbents with a riskier and more costly mix of patients.

Advocates of diversifying the supply of public services providers argue that private, for-profit entrants will innovate and offer higher quality than incumbents, and that entry of private providers will create competitive pressure on public providers to raise their own

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performance (Le Grand, 2009; Seddon, 2007). We are particularly focused on testing this latter claim: can the entry of private, for-profit surgical centres improve the performance of incumbent public hospitals?

Critics of market-based reforms generally cite the many ways that public services, and health care in particular, differ from highly stylised, perfectly competitive markets, and argue that competition will not improve performance (Jones and Mays, 2009; Fotaki et al., 2008). Moreover, it is sometimes argued that, because new entrants are often much smaller than incumbents (in our case, we analyse surgical centres competing against hospitals), they may not have sufficient scale to affect the behaviour of existing providers (Goddard, 2015). A third criticism is that private, for-profit firms may select customers with desirable characteristics (e.g. better students or less risky patients), leaving public providers treating a riskier or costlier group of users (Los Angeles Times Editorial Board, 2016; Bardsley and Dixon, 2011). More generally, it is not clear that governments are well equipped to determine where to locate entrants in such a way as to engineer effective competition.

The English NHS provides a unique environment in which to test the effect of private, for-profit provider entry on public service providers' performance, and in so doing to analyse the extent to which governments can 'create' competition. In the 2000s, the British government facilitated the entry of Independent Sector Treatment Centres (ISTCs). ISTCs are private, for-profit surgical centres focused on provision of routine, high volume elective (i.e. medically necessary, non-emergency, scheduled in advance) surgical procedures to public (NHS) patients. This policy was part of a wider policy package designed to tackle waiting times within the English NHS, the centrepiece of which was an ambitious set of targets to reduce waiting times for surgery. ISTCs were established to rapidly expand capacity in regions deemed at risk of not meeting these targets (Naylor and Gregory, 2009). As we demonstrate, while the placement of these specialty surgical centres was correlated with local public hospital waiting times during the pre-policy period, their placement was uncorrelated with measures of the efficiency and clinical quality of these incumbents over the same period. This implies that treatment assignment was unrelated to the pre-policy levels of the outcome variables we study. In addition, we demonstrate that public hospitals close to ISTC entrants had nearly identical pre-entry trends to public hospitals unexposed to ISTC entry across a range of performance measures (other than waiting times). We use this observation to motivate a difference-in-difference (DiD) strategy to estimate the causal effect of ISTC entry on outcomes at nearby public hospitals and highlight that our control group serves a good counterfactual for what would have occurred to the treatment group after 2004/5 in the absence of the entry of ISTCs.

Measuring efficiency of health care provision is a long-standing challenge because of the absence or poor standard of data on costs and quality. Faced with these problems, researchers have frequently used patient length of stay (LOS) as a proxy for efficiency (Fenn and Davies, 1990; Martin and Smith, 1996; Gaynor et al., 2013) on the grounds that, provided clinical quality can be maintained, shorter LOS implies lower costs for the same outcomes. However, a key difficulty with using LOS to capture efficiency is that it is heavily influenced by patient characteristics – patients in poorer health before surgery will tend to have longer lengths of stay for reasons unrelated to hospital efficiency. In this study, we use an innovative approach to address the influence of patient characteristics on LOS-based efficiency measures by disaggregating LOS into two components: time from admission until surgery ('pre-surgery LOS'), and time from surgery until discharge ('post-surgery LOS'). We show that pre-surgery LOS is less affected by patient characteristics than other components of LOS, and use it – or alternatively, the percentage of patients treated on the day of admission – as a proxy for hospital efficiency.

In what follows, we show that the entry of private, for-profit specialty surgical centres led to a 16% reduction in pre-surgery LOS at nearby public hospitals – which translates to a 24 percentage point increase in the proportion of patients treated on the day of admission.

However, we also find evidence that these entrants engaged in risk selection, leaving nearby public hospitals with a sicker (and therefore costlier) mix of patients. In particular, public hospitals exposed to the entry of private specialty surgical centres experienced an 11.6% deterioration in average patient health status as captured by the Charlson score (defined in Section 4). This increase in patient severity likely led to an increase in post-surgery LOS at incumbent NHS hospitals. Finally, while ISTC entry may have led to reduced case loads at some public hospitals with which they shared a market, we show that our estimated treatment effects are not driven by changes in volume caused by ISTC entry.

This paper adds to several literatures. First, it builds on previous work assessing how the entry of private, for-profit firms impacts the performance of incumbent public service providers (Hoxby, 1994; Barro et al., 2006; Cutler et al., 2010; Sass, 2006). In general, researchers have struggled to assess the causal impact of competition from new market entrants (e.g. surgical centres and charter schools) into markets for public services because the entry location of private firms is usually endogenous. We exploit the fact that siting of surgical centres in England was driven by government policy tied to waiting times, not our efficiency measure, and show that the entry of ISTCs raised incumbent hospitals' productivity. Second, it adds to the broader literature assessing the impact of hospital competition (Kessler and McClellan, 2000; Gaynor et al., 2015; Cooper et al., 2011). We illustrate that, in markets where payments are regulated, competition can raise hospitals' efficiency. Moreover, we find that smaller entrants can affect the behaviour of larger incumbents. Third, it adds to the literature analysing whether private, for-profit surgical centres offering public services risk-select against public incumbents (Barro et al., 2006; Winter, 2003; Cram et al., 2005; Street et al., 2010; Zimmer and Guarino, 2013; Bifulco and Reback, 2014). We find that the entry of ISTCs left public hospitals with a riskier mix of patients. To some extent, this was by design: ISTCs in England were focused on treating uncomplicated cases. While the entry of specialist surgical centres focused on routine procedures could in theory represent efficient patient sorting, such an arrangement is likely to leave existing providers treating a sicker patient mix and worse off financially, unless it is accompanied by a reimbursement system that adequately adjusts payments to reflect patient severity. The consensus is that NHS payments were not adequately risk adjusted during the period we investigate (Mason et al., 2008), meaning that NHS hospitals that had an ISTC enter nearby were likely left worse off as a result of being left with a sicker mix of patients.

More generally, this paper highlights the trade-offs that policymakers face when considering policies to encourage the entry of for-profit firms to compete with public service providers. Facilitating entry can lead to competition, which can prompt incumbent providers to raise their performance. However, these for-profit entrants may have very different objectives than incumbent providers, and may have a higher propensity to risk-select in order to draw a more advantageous mix of patients. Our work highlights the need for policy-makers to take risk-adjustment of payments seriously when considering policies to promote competition between firms with different objectives and differing abilities to treat complicated cases.

The remainder of this paper is structured as follows. Section 2 presents background information on recent NHS reforms, with particular focus on the ISTC programme. Section 3 explores the potential impact of ISTC entry on incumbents' performance. Section 4 presents the data and empirical strategy. Section 5 reports the results, while Section 6 discusses and concludes.

2. Recent NHS reforms and the ISTC programme

The English NHS, founded in 1948, is funded through general taxation and, with few exceptions, offers health care that is free at the point of use. Patients must register with a single general practice (GP) clinic for the provision of primary care, and GPs act as 'gatekeepers' to

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