



Determinants of the cost of capital for privately financed hospital projects in the UK



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ABSTRACT

Many governments make use of private finance contracts to deliver healthcare infrastructure. Previous work has shown that the rate of return to investors in these markets often exceeds the efficient level. Our focus is on the factors that influence that return. We examine the effect of macroeconomic, project- and firm-level variables using a detailed sample of 84 UK private finance initiative (PFI) contracts signed between 1997 and 2010. Of the above variables, macroeconomic conditions and lead sponsor size are related to the investor return. However, our results show a remarkable degree of stability in the return to investors over the 14-year period. We find evidence of a ‘prevailing norm’ that is robust to project- and firm-level variation. The sustainability of excess returns over a long period is indicative of a concentrated market structure. We argue that policymakers should consider new mechanisms for increasing competition in the equity market, while ensuring that authorities have the specialist resources required to negotiate efficient contract prices.

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1. Introduction

In many OECD countries, tight control of public sector healthcare spending has resulted in reductions to capital budgets [1]. In this context, private finance is playing an increasingly important role, especially in relation to hospitals, for which large-scale capital investments are often required. Despite a large critical literature [2–4], governments in Australia, Canada, France, Italy and the United Kingdom (among others) have made extensive use of private finance contracts – variously called private finance initiatives (PFIs) or public private partnerships

(PPPs) – in which a consortium of private investors undertakes to finance, build and maintain new healthcare facilities, receiving in return a periodic fee paid by the public sector. In addition, in developed countries such as Spain, and in many developing countries, this model has provided the foundation for projects in which the control of complex clinical services is transferred to the private sector for long periods [5].

Between 1993 and 2010, the UK’s National Health Service (NHS) played host to the world’s largest PFI/PPP hospital-building programme [6]. To date, 147 PFI projects for hospital facilities have been agreed by NHS organisations and private consortia, representing capital spending of £15.16 billion in 2013 prices (HM) [7]. This investment has been financed from two sources: *debt* (which entitles banks or bondholders to a specified stream of cash flows in the form of capital payment and interest) and *equity* (which entitles the investor to all cash flows left in the project after meeting operational and financial costs). Our focus is on the

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Box 1: The main financial terms used in the paper

Cost of equity: the rate of return that is expected by equity providers. It is defined, according to the Capital Asset Pricing Model theory, as the sum of (i) the rate of return available on risk-free investments (the risk-free rate), and (ii) a premium for the amount of systematic risk that is involved in the equity investment (the Equity Risk Premium).

IRR – Internal Rate of Return: the rate that, when applied as a discount rate to a stream of projected cash flows, produces a Net Present Value (NPV) of zero. As an alternative, a firm may calculate the NPV with a discount rate set equal to its cost of capital. A positive NPV project increases the value of the firm. When considering an investment, a rational investor will choose those investments whose IRR is above the cost of capital for that project – i.e. the rate of return on financial assets with equivalent risk. IRR is calculated using the cash flows generated by a project. In this paper we consider a blended equity IRR. This IRR is calculated taking into account the cash inflows and outflows for project sponsors in their dual role of equity providers and financiers with subordinated (or junior) loans.

rate of return expected by the investors of primary equity – i.e. the return on the capital invested by the original members of the consortium, which is normally constituted as a ‘special purpose vehicle’ (hereafter SPV).

Previous studies have attempted to identify the magnitude of the expected return to equity [8–12]. A consistent finding is that the return exceeds the cost of equity estimated using the Capital Asset Pricing Model (see Box 1 for a definition) – a method commonly used by firms to determine the minimum acceptable return on investment. This implies that healthcare organisations have to pay higher fees to private consortiums than would be the case in the absence of this excess margin – a matter of clear significance in welfare terms, since the dead-weight loss associated with taxation implies that the social cost of additional government spending related to positive excess returns is greater than the social benefit associated with higher producer surplus [13]. Alternatively, in extra-welfarist terms, the excess return implies that healthcare systems have less capacity to address population health needs within their allocated budgets.

In this paper we focus on the difference between the expected Internal Rate of Return (IRR, see Box 1 for a definition) to equity of PFI projects and the gross redemption yield on short-term government bonds (henceforth: the risk-free rate) in order to identify factors that influence the excess return on equity documented by previous studies.

By studying the difference between the IRR and the bond yield, which we call here the *Net IRR*, we are able to examine variation in the return above the risk-free rate without having to estimate for each project the appropriate risk premium, which would not be possible due to the lack of available information. We find that, of the variables that are known to impact on returns in the capital markets, only economic conditions and lead sponsor size are related to the Net IRR. Overall, we highlight the existence of a

‘prevailing norm’ in the net return that is robust to variation in firm- and project-level characteristics. The emergence of this norm, which is set at a rate shown by previous research to be in excess of that normally expected on similar assets, is indicative of a market structure that confers substantial advantages on investors – especially larger ones – when bargaining with public sector healthcare organisations.

In the context of the worldwide spread of PFI/PPP for delivering new investments in healthcare, our findings are relevant for policy makers, regulators and the managers of healthcare authorities, all of whom are interested in securing better value for money from such transactions. This is especially true in the post global financial crisis environment, in which the amount of equity, relative to debt, that is invested in PFI/PPP projects has markedly increased. Stricter capital adequacy regulations under the Basel III Accord are, for example, encouraging banks to promote more conservative (that is, less debt-heavy) capital structures for new projects. In addition, in December 2012, the UK government outlined a set of reforms to standardised PFI contracts. These reforms – accompanied by a new policy label, Private Finance 2 (PF2) – require consortiums to increase the proportion of equity from the 5–10% of total capital expenditure that was normal under the previous PFI programme to 20–25% [6]. No PF2 contract is included in the present study as no such project had been signed at the time of writing. However, as our findings relate to the return on equity, they are of crucial relevance to decision-makers in the UK and internationally, for whom the cost of this form of capital is an increasingly important issue.

2. The analytical approach

Applying this kind of analysis to PFI projects is entirely new. Therefore, we utilise a set of explanatory variables that have been applied in empirical studies of private equity and venture capital returns, which are asset classes that share at least three common features with equity investments in the PFI market. First, ownership of the equity in the special purpose vehicle is held by a group (or syndicate) of investors [14]. Second, the equity is highly leveraged, so that debt capital finances the majority of the investment in most cases [6]. Third, because of non-standard features of the asset class, liquidity is very low relative to the norm for most other parts of the capital market [15]. These similarities make us confident about using the following three sets of explanatory variables.

2.1. Macro-level variables

We examine the impact of general economic conditions using two indicators. First, we use the *term spread*, i.e. the difference in interest rates on bonds with different maturities, which is known to produce accurate forecasts of recessions [16]. Several conceptual considerations, based on the role of monetary policy and its interplay with investor expectations, explain the use of the term spread as a leading indicator of economic activity [17]. A tighter monetary policy usually translates into

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