



# Concentration risk and internal rate of return: Evidence from the infrastructure equity market

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## Abstract

Although an adequate risk sharing is considered essential for the value for money of Private Finance Initiatives (PFIs), research has not yet considered if the market concentration of equity holders influences the return of projects in which they invest.

Basing on a comprehensive dataset of 706 UK PFIs, our analysis suggests that the equity market concentration influences the return on projects and, therefore, the price paid by the public sector to remunerate its private partners. Furthermore, the return on PFIs is correlated to the power exercised by the central lobby investors, mainly financial ones.

Since the recent evolution of the PFI policy requires a greater involvement of equity holders, policymakers should take into consideration the market concentration risk that can significantly impact on the value for money of such projects.

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## 1. Introduction

Public Private Partnerships are a public procurement model to provide infrastructures and services through a consortium of private investors (Hellowell and Vecchi, 2012). Governments rely on these partnerships to build, transform and modernize non-traded public services and infrastructures, shifting the burden of infrastructure from capital expenditures to future current expenditures (Shaoul, 2005). Among different partnership-types, Private Finance Initiative (PFI) is based on a fee-type reimbursement of the private partner by the sponsoring public body (Winch and Schmidt, 2016). In other words, “the public sector pays a unitary charge which includes payments for ongoing maintenance of the asset, as well as repayment of, and interest on, debt used to finance the capital costs. The unitary charge, therefore, represents the whole life cost associated with the asset” (HM Treasury, 2016, p. 3).

In PFI contracts, an appropriate risk allocation between the public and private partners is essential to achieve value for money (Khan et al., 2014; Khadaroo, 2014). Since the private sector is in a better position to manage risks at lower costs, the more risks are transferred to the private partner, the more the public partner can extract value from PFIs (Grout, 2005). Nonetheless, finding an optimal and workable risk-balance is not easy and it depends also on the bargaining power of partners (Broadbent and Laughlin, 2003; Broadbent et al., 2008) and on the efforts of partners to negotiate and transfer risks elsewhere (Demirag et al., 2012). Since value for money is linked to risk transferred away from the public partner, it is difficult to assess whether PFIs represent good value for money.

As a result, PFI projects are often perceived as a relatively low risk investment for equity investors, being backed by government support with a stable long-term yield and with many of the major risks shifted from investors to subcontractors (Akintoye et al., 2003; Shaoul, 2011).

Chiang et al. (2010) suggest that the internal rate of return (IRR) is the preferred method to evaluate the return on PFI

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projects and the IRR of PFI projects can be also seen as the price paid by the public sector to repay and remunerate its private partners (HM Treasury, 2006). Overall, the literature suggests the presence of high returns for the private partners if compared to the risk they actually borne (Shaoul, 2005) and poorly designed procurement processes and anti-competitive practices among bidders can actually allow equity investors to extract profits (Hellowell and Vecchi, 2012).

An under-investigated topic concerns whether the returns for shareholders can relate also to the equity market structure. On the one hand, a limited number of bidders can actually distort the degree of competition on the market and can affect the IRR of projects. PFIs introduce statutory financial performance obligations, creating barriers to entry and potentially increasing the equity market concentration (Froud et al., 1998). Barriers to entry are inevitably created for smaller firms and/or firms without a recognized track record. On the other hand, some shareholders tend to cooperate rather than compete on capital markets, thus creating a central lobby to exploit the profitability of PFI projects (Asenova and Beck, 2010; Toms et al., 2011).

Although the potential influence of the equity market concentration on the projects' IRR has been postulated in literature, the topic remains surprisingly unexplored. This is even more relevant in light of the current evolution of the PFI policy where the PF2 model requires a greater involvement of equity holders (HM Treasury, 2012).

Building on this premise, this study analyses the impact of the equity market concentration on projects' IRR and, as a consequence, on the price paid by the public sector to repay and remunerate its partners. Our analysis accounts also for the level of control and the co-investment strategies among shareholders to provide a more comprehensive picture of the actual equity market concentration.

Basing on a comprehensive dataset of 706 UK PFIs over a time period of 17 years, our analysis suggests that the equity market concentration influences the price paid by the public partner. Furthermore, the influence of the equity market concentration on IRR is more evident for the central investment lobby, mainly represented by financial shareholders.

In the next sections we present the relevant literature. We then describe the source of data and the method. We present the results and discuss them in light of the current evolution of the PFI policy.

## 2. The infrastructure equity market structure

One of the potential determinants of the IRR of PFI projects is the market structure, where few investors can influence the price paid by the public partners on contracts. Vecchi et al. (2013) suggest that the most likely source of "excess" return is the lack of competition in the PFI market. The market concentration represents the degree to which a small number of firms account for a relatively large percentage of market shares. Concentration in market share leads to a reduction in the competition for contracts, which may give substantial advantages to the main market players. High market concentration can allow a firm to influence the trading pricing power and vary

the quality of products or services if compared to perfect competition (Baumol, 1982).

Even if equity represents a small percentage of the PFI capital value, the control over the project is actually determined by equity holders (Chinyere and Xu, 2012). For example, shareholders usually exercise control over all changes of PFI contracts and strongly control the company's behavior. If investments in the PFI market were to be competitive, companies investing in PFI projects would have a low degree of concentration. On the other hand, a situation of market concentration shows a high degree of ascendancy of equity holders on the market.

Furthermore, firms tend to combine into bigger groups when competing on the market to exploit scale economies and to reach a greater level of ascendancy (Demsetz, 1973). Businesses can be also tactically divided into medium or small firms at their operative level, but strategically cohesive when it comes to larger issues of economic policy (Laeven and Levine, 2008). Large-scale groups are expected to enjoy a greater ascendancy on the public sector than smaller ones. This ascendancy is exercised in terms of concentrated industrial, commercial and financial resources. As such, to investigate the equity market concentration in PFIs it is necessary to account for the holding structure of firms thus considering the parent companies or groups rather than the companies that directly invest in the project.

### 2.1. Level of control and co-investment pattern

Equity investors exercise different degree of control over decisions taken by the project company, ranging from absolute control to zero control, as specified in the funding agreement of the project (EPEC, 2010).

The concentration based on market shares does not account for the level of control that shareholders have over the projects in which they invest. The major equity holder can indeed have greater decisional power over the project profitability, having more influence over any refinancing decisions (Asenova and Beck, 2003), thus making the level of control an important aspect in the analysis of the market concentration.

Asenova and Beck (2010) also point out that some equity holders can cooperate rather than compete on capital markets, so that the financed projects can meet their profitability expectations. Since the dependence on private capital is an intrinsic characteristic of PFI schemes, it is likely that investors tend to cooperate to increase their power.

Khan et al. (2014) evidence that the creation of PFI contracts requires a strong degree of co-operation between two or more public and private entities. In this regard, not only companies tend to acquire other companies in order to increase their ascendancy on the market, but also investors cooperate with each other, co-investing in the same projects (D'Errico et al., 2009). As a matter of facts, financiers can combine to exploit PFI opportunities and produce lobbying pressures (Demirag et al., 2011; Toms et al., 2011; Asenova and Beck, 2010). Therefore, market concentration can increase if considering the co-investment strategies among investors.

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