

PRIVATE FINANCE RATES OF RETURN: EVIDENCE FROM THE UK'S PFI ROADS SECTOR

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ABSTRACT

This paper presents the results from an ex-post accounting analysis of the rates of return enjoyed by the providers of equity and debt for UK PFI roads. The analysis examined 99 individual sets of publicly-available financial statements from Companies House (from 10 PFI road operating companies over a 9-10 year period) to assess outturn returns and compare them with ex-ante expectations.

The study is a departure from previously published research which has largely been restricted to ex-ante financial analysis. Only now that PFI roads have matured, and are some way into the steady-state operating phase of their respective concessions, are there sufficient data for a 'first-cut' ex-post financial analysis to be conducted and for the findings to be reported.

Rates of return are an important consideration for planners and policy-makers as they effectively represent the cost, to the public sector, of using private finance. Comparison of the outturn benefits of using private finance with the outturn costs allows for an assessment to be made of the actual value-for-money being achieved by using PFI-type procurement approaches.

In the context of the PFI, many commentators point out that private finance is more expensive than public funding. The research reported here, however, suggests that the cost differential may be narrower than many believe.

1. INTRODUCTION

A number of studies have considered the ex-ante financial performance of UK PFI roads. However these studies have highlighted the limitations of such an approach – for example, PricewaterhouseCoopers (2002), the Public Accounts Committee (2002) and HM Treasury (2003b) – stressing the need for ex-post research to be conducted to reveal actual, as opposed to anticipated, company performance. That ex-post research has been conducted and is reported here.

This work builds upon, updates and extends the work of Edwards et al (2004). Edwards et al examined the published annual accounts from eight PFI road companies for six years (1997 – 2002: 48 sets of accounts). In this paper, the annual accounts from ten PFI road companies are considered from their incorporation to the most recent, publicly-available financial statements (99 sets of accounts in total) and a more detailed analytical treatment is presented. The accounting dataset is summarised in Table 1. Together, the ten project roads represent the full portfolio of UK Highways Agency PFI roads as it stands today.

Table 1: Accounting DataSet

Project Road	Company Name (SPV)	Incorporated	Most Recent Accounts	Annual Accounts
A19	Autolink Concessionaires (A19) Ltd.	Jun 2000	Oct 2007	12
A30/A35	Connect A30/A35 Ltd.	Sep 1995	Mar 2007	10
A50	Connect A50 Ltd.	Mar 1995	Mar 2007	12
M1-A1	Connect M1-A1 Ltd.	Dec 1994	Mar 2007	12
A69	Road Link (A69) Ltd.	Nov 1995	Mar 2007	11
A1(M) D2D	RMS (Darrington) Ltd.	Dec 2002	Dec 2006	4
A417/A419	RMS (Gloucester) Ltd.	Apr 1995	Dec 2006	12
A1(M)	RMS (Peterborough) Ltd.	Mar 1993	Dec 2006	12
A249	Sheppey Route Ltd.	Oct 2003	Dec 2006	3
M40	UK Highways M40 Ltd.	Apr 1995	Dec 2006	11
Total				99

2. PFI ROAD PROJECT COMPANY ACCOUNTS: EXAMPLE

Company accounts use a framework and language that departs from those traditionally employed by transportation professionals. Phrases like ‘non-current assets’ or ‘accounts payable’ appear to de-link the accounts from the operations of a road project and its underlying performance. However some simple explanations re-establish the link between company performance and reported accounts. These explanations are provided below using extracts from the published accounts for Connect A30/A35 Ltd., the project company responsible for the A30/A35 PFI road.

2.1 The Profit and Loss Account

The Profit and Loss (P&L) account – alternatively known as the Income Statement – for Connect A30/A35 Ltd. is presented in Figure 1 and is explained in the following paragraphs.

Turnover: Turnover represents annual income received from the Highways Agency. In the case of the A30/A35 PFI road, this reflects the combination of light and heavy vehicles using the road multiplied by their respective contractually-agreed reimbursement rates (pence per kilometre). All of the early Highways Agency roads employ similar, shadow-toll based payment mechanisms which link project income directly to traffic usage. Later PFI roads incorporate alternative payment mechanisms reflecting different mixes of traffic usage, asset availability, safety performance and/or the level-of-service enjoyed by road users. Although the project companies sometimes receive income through other avenues, this incremental revenue remains small in comparison to receipts from the Highways Agency. For all intents and purposes, Turnover – as presented in project company accounts – is income received from the Highways Agency.

Figure 1: PFI Roads Accounts – Profit & Loss Account (A30/A35 Ltd)

Profit and Loss Account			
For the year ended 31 March 2001			
		Year ended 31 March 2001 £'000	15 Month Period ended 31 March 2000 £'000
	Notes		
Turnover	2	26,218	13,929
Cost of sales		(7,998)	(7,033)
Gross Profit		18,220	6,896
Net operating expenses		(398)	(392)
Operating profit before interest	3	17,822	6,504
Interest receivable	4	94	83
Interest payable	5	(11,696)	(4,706)
Profit on ordinary activities before taxation		6,220	1,881
Taxation	6	(1,701)	(608)
Profit for the financial period transferred to reserves		4,519	1,273

The accompanying notes are an integral part of this profit and loss account.

There were no recognised gains and losses in either period other than the profits shown above.

One accounting complication that arises with Turnover is that, depending on a road operating company's revenue recognition policy, it may not reflect all of the income received from the Highways Agency. If money is received for work yet to be completed, for example, the company may elect to post it as Deferred Income in its balance sheet. Deferred Income, however, usually represents a small proportion of total income and, as such, Turnover should broadly reflect receipts from the Highways Agency. The issue of Deferred Income is revisited later.

Cost of Sales: The Cost of Sales reflects the road operating and maintenance costs as invoiced by the parties (sub-contractors) responsible for these obligations. Expenditure items would typically include routine and periodic maintenance (roads and structures), traffic equipment maintenance, the cost of liaison with statutory undertakings, overheads, insurance costs and any lane closure charges imposed by the Highways Agency. The Cost of Sales also includes overheads and depreciation. Depreciation serves to spread the upfront road construction or improvement costs over the lifetime of the concession. Depreciation can account for half of the cost of sales. As a significant line-item, it is reversed out of the accounts in the analysis presented later. The third line in the accounts, **Gross Profit**, is simply Turnover less the Cost of Sales.

Net Operating Expenses: Net Operating Expenses reflect additional overhead costs charged to the project; typically a relatively small expense. The fifth line in the accounts, Operating Profit Before Interest, is simply Gross Profit less the Net Operating Expenses. In general, Cost of Sales (discussed above) represents direct costs whereas Net Operating Expenses represents indirect costs.

Interest Receivable/Payable: Interest Receivable reflects the income generated by cash placed on deposit. As an amount, it is dwarfed by Interest Payable – the interest due on the borrowings (loans, bonds or some mix thereof) originally secured to cover the upfront construction costs. Interest Payable will include other, smaller, finance-related costs such as bank fees and swap charges. The ‘swap’ converts floating to fixed-interest rate borrowings, thus insulating the borrower from interest rate risk. A charge for providing this facility is levied by the swap provider; usually a bank. However the interest-related figures will remain dominated by the interest payments due against the original borrowings, accounting for 90-95% of interest costs. Line eight, **Profit on Ordinary Activities Before Taxation**, is simply Operating Profit Before Interest less Net Interest Payable.

Taxation: Corporate tax is levied at the standard rate of 30% on profit. This charge will be off-set against any deferred tax carried forward from earlier periods when the project was incurring losses (for example, during the road construction period). The detail of tax treatment is not important here. The point of note is that the interest repayments on debt are deducted before tax. This contrasts with dividends to equity-holders, which are distributed after tax. Thus tax efficiency favours highly-g geared capital structures – one of the reasons why such structures are employed by PFI project companies.

The last line (the ‘bottom line’) is **Profit Transferred to Reserves**; simply Profit less Taxation. This is cash that is available to be distributed to shareholders or is kept by the company as retained profits.

2.2 The Balance Sheet

An illustrative balance sheet is shown in Figure 2.

Fixed Assets (Non-Current Assets): PFI road companies have two ways of recognising the project road in their accounts. In Figure 2, Connect A30/A35 Ltd recognises the road (the value of the construction and/or improvement works) as a Fixed (Non-Current) Asset. The majority of early PFI projects (including roads) recognise their respective assets in this way¹. The amount recorded falls between years 2000 and 2001, reflecting asset depreciation. The amount by which the asset depreciates is posted in the Profit and Loss account under the Cost of Sales.

Figure 2: PFI Roads Accounts – Balance Sheet (A30/A35 Ltd)

Balance Sheet			
31 March 2001			
	Notes	31 March 2001 £'000	31 March 2000 £'000
Fixed Assets			
Tangible assets	7	138,850	143,274
Current Assets			
Debtors	8	3,960	2,197
Cash at bank and in hand		2,685	2,671
		6,645	4,868
Creditors: Amounts falling due within one year	9	(7,534)	(7,903)
		(889)	(3,035)
Net current liabilities			
		137,961	140,239
Total assets less current liabilities			
Creditors: Amounts falling due after more than one year	10	(126,601)	(135,117)
Provisions for liabilities and charges	11	(2,924)	(1,219)
		8,436	3,903
Net assets			
Capital and reserves			
Called-up share capital	12	1,227	1,213
Profit and loss account	13	7,209	2,690
		8,436	3,903
Shareholders' funds	14		
Signed on behalf of the Board			
26th September 2001			

Current Assets: Current Assets are comprised of debtors (receivables) and cash. **Debtors** represent monies owed to the company (trade debtors, VAT claims and/or any prepayments such as insurance prepayments) – expected to be received within a year.

Creditors (Current Liabilities): Amounts Falling Due Within One Year: Current Liabilities represent payments that are due to be made within a year. Typically these comprise some loan repayments, trade creditors (perhaps in connection with the construction works) and tax (corporation tax and VAT payable). **Net Current Liabilities** is simply Current Assets less Current Liabilities.

Creditors (Long-Term Liabilities): Amounts Falling Due After One Year: Long-term liabilities are dominated by the remainder of the loan repayments (the proportion due after one year). As mentioned earlier, some road operating companies defer the recognition of a proportion of their income from the Highways Agency. This deferred income is not included as Turnover in the Profit and Loss Account but is instead recognised in the balance sheet as a long-term liability.

Provisions for Liabilities and Charges: Provisions for Liabilities and Charges typically picks up information relating to deferred taxation.

Shareholders' Funds: Shareholders' Funds is the sum of the equity provided by shareholders (called-up share capital) and the profits retained by the company (profit and loss account). Unless distributed as dividends, the retained profits accumulate. In the case of Connect A30/A35 Ltd, for the year 2000/01, the opening balance for retained profits was £2.690 million. Adding the profit recorded in the Profit and Loss Account (£4.519 million, see Figure 1) gives the reported figure of £7.209 million at the year end. The Balance Sheet 'balances' when:

Total Assets = Total Liabilities + Shareholder's Funds

3. ANALYSIS OF THE PFI PROJECT COMPANY ACCOUNTS

The purpose of the accounting analysis presented in the following pages is to compute key financial statistics and ratios for each PFI road operating company, to track their evolution over time and to compare the metrics among the companies themselves. Additionally, as the projects – when taken together – represent the full portfolio of UK Highways Agency shadow toll roads, an assessment of the PFI roads programme in its entirety is made. For this, annual Highways Agency expenditure is compared with the aggregate receipts received by the road operating companies (as recorded in their annual accounts) to check that the figures can be reconciled.

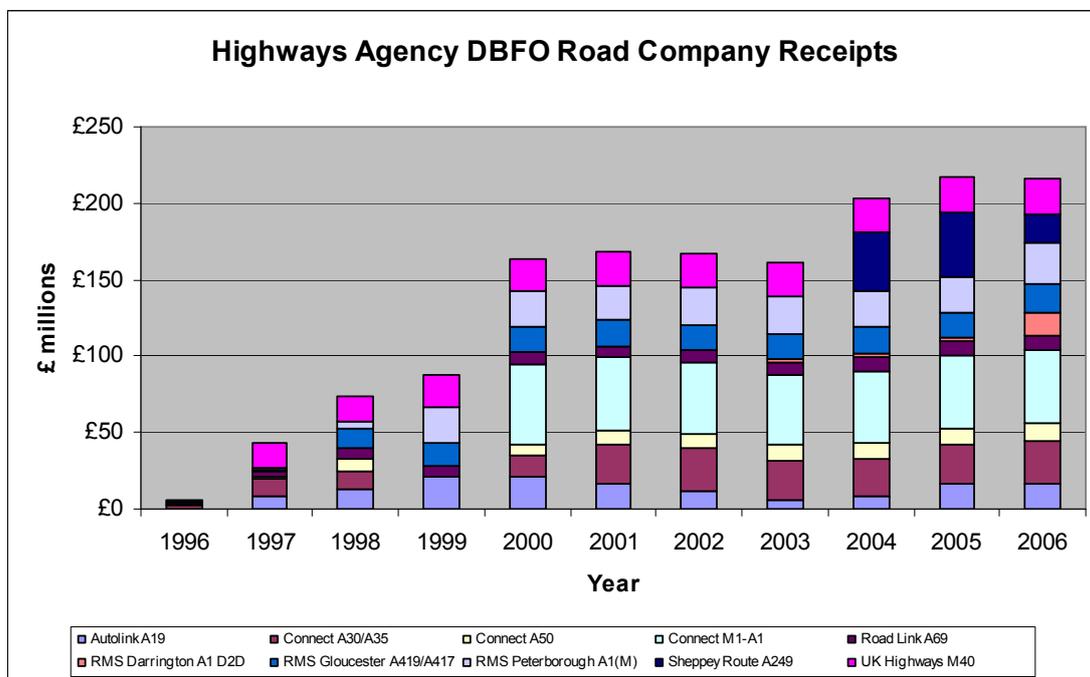
The reported annual income (Turnover) received by each of the road operating companies is presented in Table 2. The year 2006 represents the last year for which published accounts for all of the road companies were available. The companies marked in blue are recent PFI project roads. Payments only started to be received on Road Management Services' A1 Darrington to Dishforth (D2D) project in 2003 and on Sheppey Route's A249 project in 2004. The remaining companies operate the first eight Highways Agency's PFI road projects. With the longer history of operations (and hence accounts) these are the focus for the analysis reported here.

Table 2: PFI Road Operating Company Income (£ millions)

PFI Co.	Year											Total
	96	97	98	99	00	01	02	03	04	05	06	
Autolink A19	0	8	13	21	21	16	11	6	8	16	16	136
Connect A30	2	11	12	0	14	26	28	26	25	26	28	200
Connect A50	1	2	8	0	7	9	10	10	10	11	12	79
Connect M1-A1	0	0	0	0	53	47	46	45	46	47	48	333
Road Link A69	0	4	7	8	8	8	8	9	9	9	10	79
RMS A1 D2D	0	0	0	0	0	0	0	2	3	3	22	30
RMS A419/A417	1	2	13	15	16	16	17	17	17	17	17	149
RMS A1(M)	1	1	4	22	23	23	24	24	24	23	24	195
Sheppey A249	0	0	0	0	0	0	0	0	38	42	19	99
UK Highways	0	16	17	21	21	22	22	22	22	23	23	210
Total	5	43	74	87	163	168	167	161	203	217	218	1,508

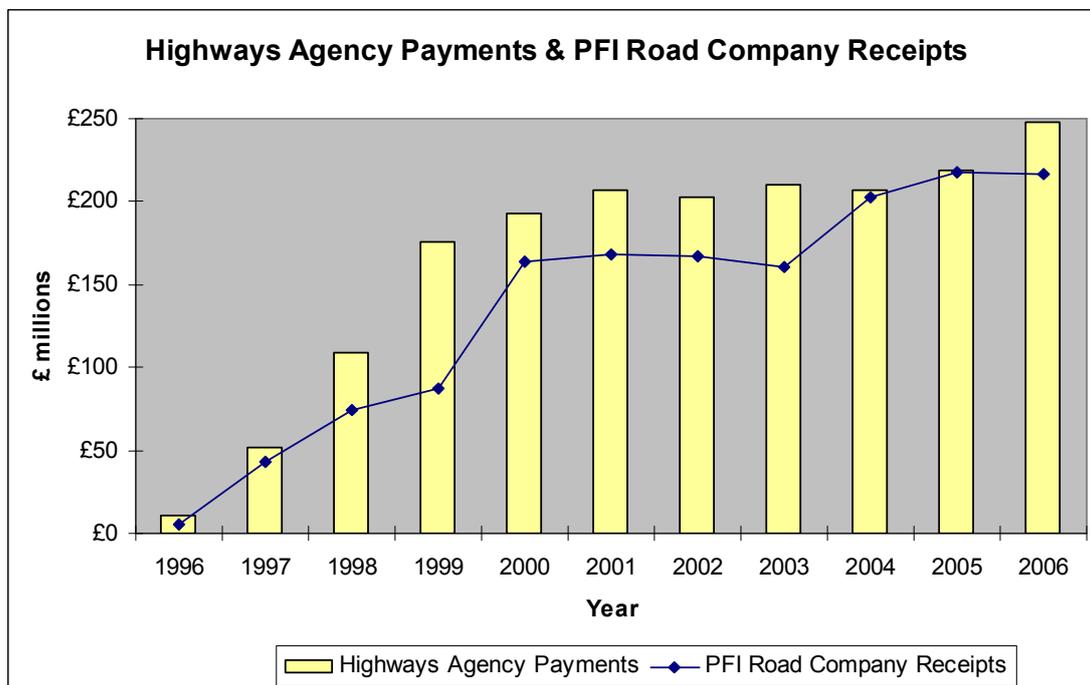
For each road, a general trend comprising of three phases is apparent. Project income commences, not upon contract signature but post-construction, when the road – or part of it – is available for use. The income ramps-up then flattens-off reflecting steady state operations. Total turnover builds from 1996 to 2000, stabilises (as the first eight roads reach steady state) and then steps-up as the two most recent PFI projects come on-line. These three phases are illustrated in Figure 3.

Figure 3: PFI Road Operating Company Income



In Figure 4, project company receipts are compared with the Highways Agency expenditure on PFI roads as recorded in the Treasury's PFI Signed Projects List². The project company receipts tally reasonably well with the Highways Agency's recorded expenditure. There are two main reasons why the two sets of figures differ. First, the financial year used by the Highways Agency is not necessarily the same as that used by the project companies (and some of the project companies changed their year ends during the period being analysed). Second, as discussed already, in the early years a number of the project companies elected to recognise a proportion of their receipts as deferred income. This income does not appear as Turnover but will show in the respective accounts later; amortised over the life of the concession in-line with the depreciation charges.

Figure 4: PFI Company Income & Highways Agency Expenditure



The broad compatibility between the cost and revenue data-sets ('top down' from the Highways Agency, and 'bottom up' from the project companies) supports the notion that the early PFI roads programme can be analysed (bottom up) by aggregating the financial statistics contained in the individual project company accounts. That analysis is reported later. First, the individual project company accounts are examined.

4. PROJECT COMPANY ACCOUNTING ANALYSIS

The following section reports the findings from the accounting analysis of the first eight PFI road operating companies. The two more recently established road companies are omitted as they were yet to move into steady state operations and their financial profiles were still evolving at the end of 2006. As the accounting analysis was conducted in a consistent fashion for each of the project companies, a worked example is presented to illustrate the analytical approach employed and to introduce key financial statistics and ratios. That worked example takes Road Management Services (Gloucester) Ltd. – the special purpose vehicle (SPV) responsible for the A419/A417 PFI road project. Following the worked example, summary findings for the other early privately-financed road operating companies are consolidated and are presented to gain broader insight into the financial performance of the UK's PFI roads sector as a whole.

Data from the accounts (and, as relevant, the notes to the accounts) were input into standardised spreadsheets set-out in an identical fashion. This is known as 'spreading' the accounts. The spreadsheets are comprised of three sections: the Income Statement at the top, the Balance Sheet in the middle, and Key Financial Statistics and Ratios at the bottom. Logic checks were embedded to ensure the accuracy of the data and the considerable data input process (ensuring that the balance sheet balanced, for example). The spread accounts for the A419/A417 are presented in Table 3 and are discussed in the text that follows.

4.1 The Income Statement

The PFI contract for the A419/A417 – a medium-sized project with a construction value around £110 million – was signed in February 1996. All new works were completed in December 1997 (nine months ahead of schedule). The top line (Turnover) suggests that steady state operations commenced in 1998. The Cost of Goods Sold and Operating Expenses – expenditure relating to the operations and maintenance of the road – are relatively small. This undoubtedly reflects the fact that the pavement was new. The value for Depreciation posted in the Income Statement reflects the reducing asset value shown in the balance sheet (under Plant, Property and Equipment). Between December 1998 and 1999, Plant, Property and Equipment fell from £121.1 million to £120.2 million, a drop of £0.9 million. That drop appears under Depreciation in the Income Statement for the year ending December 1999.

By far the largest project expense was Interest Expense which accounted for around 60% of Turnover. This was a recurring theme across all of the road operating companies with Interest Expense representing between 40% and 75% of Turnover (with the exception of the small capital value A69 project at 15%). A, if not the, primary function of these highly-g geared road operating companies is to meet their debt servicing obligations. Interest Expense will be comprised of the interest payments on senior debt and on sponsor's loans (subordinated debt), and the credit enhancement fee for a monoline insurer if used.

Income tax represents only 6% of Turnover. This is within the range observed for the other road operating companies (3% - 13%). Edwards et al calculate a similar average tax rate from their smaller sample of accounts (7%) and explain that this is considerably below the standard rate of corporation tax (30%) due to the companies enjoying tax relief on net interest paid. As the cost of debt is tax deductible, highly-g geared companies can be particularly tax efficient. The effective tax rate calculated here (6%) is in line with current Treasury appraisal guidance for PFI projects (see Supplementary Green Book Guidance, HM Treasury, undated).

4.2 The Balance Sheet

The asset side of the balance sheet is dominated by the Non-Current (Fixed) Assets of Property, Plant and Equipment. This represents the economic value of the road. It builds through 1996 to 1998 reflecting road construction and thereafter depreciates such that the net book value will equal zero at the end of the concession term. Across all of the road operating companies, Plant, Property and Equipment represented between 75% and 90% of total assets. In a similar manner, Total Liabilities is dominated by Long-Term Debt. This is the amount of senior debt outstanding (in the case of the A419/A417 project, the combination of a bond and an EIB loan). The debt repayment profile is typically structured to retire all obligations in advance of the end of the concession term, thus leaving a debt-free 'tail'. The tail gives lenders comfort that, should there be any problems with debt repayment in the interim, there remains a cash-generating period at the end of the concession from which funds may be called upon.

The value of Shareholders' Equity presented at the bottom of the balance sheet increases if Net Income (profit) – as recorded in the Income Statement – is retained by the company. At December 1998, this stood at £11.3 million. The Income Statement for the period ending December 1999 shows a profit of £1.0 million. That this profit was retained (was not distributed to shareholders) is confirmed by the fact that Shareholders' Equity had risen at the end of 1999 to £12.3 million. This is not the case in 2002. At December 2001, Shareholders' Equity was recorded as £16.7 million. The company reports a profit of £3.5 million in 2002 (under Net Income in the Income Statement) but the Shareholders' Equity does not increase to £20.2 million. Instead, at the end of 2002 Shareholders' Equity is recorded as £17.1 million; meaning that £3.1 million ($16.7 + 3.5 - 17.1$) was distributed to shareholders. Given the long-term nature of these PFI road concessions and the fact that

maintenance expenditure will typically be back-loaded, there may be some concern about front-loaded distributions to shareholders. However lenders insist on minimum debt service cover ratio covenants specifically to trap sufficient liquidity in projects to accommodate any unexpected departures from base-case financial performance. Below these minimum ratios, 'lock ups' prevent any distributions from being made to shareholders.

4.3 The Financial Statistics and Ratios

The first financial statistic presented is Earnings Before Interest and Tax (EBIT). This is computed by adding Non-Operating Income (mainly interest income) back into Operating Income (after depreciation and amortisation). EBIT is required to calculate an operating margin (the second statistic: EBIT/Turnover) – a widely used measure of a firm's profitability and quality of earnings. RMS Gloucester displays a very high operating margin (80%) although this is typical of the other PFI road operating companies (averaging between 60% and 85%). Operating margins are commonly used to differentiate among companies. All things being equal, the higher the operating margin, the more efficient the company. However it is important to understand exactly what expenses are included or excluded in such calculations. In the privately-financed road operating company accounts, for example, there are no staff costs. Staff are seconded to the SPVs by their respective parent companies. This flatters the operating margins.

The operating margins seen here are reminiscent of property companies where a very high value (85p in every £1) of rent is regarded as profit. Similar to most property companies, the road operating companies are very highly geared and fund most of their expenditure through debt. In doing so, they incur large interest charges that, as was explained earlier, account for between 40% and 75% of all project expenses.

The ratio of EBIT/interest coverage provides an indication of the adequacy of cash flow generation. The interest coverage ratio measures the number of times a firm could make its interest payments with its earnings before interest and tax. Generally, the higher a company's debt burden, the lower the ratio. Given the comments above, therefore, it is not surprising that the interest coverage ratios for the road operating companies are low. For RMS Gloucester it sits at 1.4x (the other companies generally lie within the range 1.15x to 1.5x). Table 4 shows the medians for key financial ratios for industrial companies at different rating categories (published by Standard & Poor's). Under normal circumstances, the low ratios observed as a result of this analysis would confine the PFI road operating companies to a non-investment grade credit rating (around 'B').

Table 4: Key Industrial Financial Ratios: 3-Year Averages (EMEA)

Credit Rating						
AAA	AA	A	BBB	BB	B	C
EBIT interest coverage (x)						
23.7	16.0	6.5	4.2	2.8	1.3	-0.9
Debt/EBITDA (x)						
0.8	0.7	1.5	2.4	3.1	5.1	-48.4
Gearing: debt/debt plus equity (%)						
22.8	25.4	35.2	45.5	52.2	73.0	198.4

Source: Standard & Poor's

Standard & Poor's rates some PFI road operating companies, however, and the credit ratings tend to lie at the lower investment grade level ('BBB'). The reason for this is that the road operating companies are not typical industrial companies. They are highly structured, project finance-based SPVs with specific contractual provisions and structural protections for lenders. These provisions and protections – which are absent in most commercial lending – allow the aggressive financial structures (in terms of gearing and coverage ratios witnessed here) to achieve investment grade ratings.

The Debt/EBITDA ratio is widely used as a dynamic measure of leverage. EBITDA stands for Earnings Before Interest, Tax, Depreciation and Amortisation. The numerator of the ratio is total debt (Short + Long Term Debt). The denominator is EBITDA (Operating Income with Depreciation and Amortisation added back in). The multiple for RMS Gloucester sits at 7x. The other road operating companies typically fall within the range 4x to 8x. These multiples are very high for a corporate entity – certainly not investment grade according to Table 4. In fact, they are more in line with the regulated utility sectors (such as water or waste water). Indeed, the road operating companies have characteristics in common with regulated utilities – largely due to the stability and predictability of future cash flows. This, in combination with the elements of structured finance described earlier, allows the privately-financed road operating companies to display the high Debt/EBITDA multiples seen here yet still attain investment-grade credit ratings.

The Interest Rate on Debt is computed as Interest Expense (from the Income Statement) divided by the sum of Short and Long Term Debt (from the Balance Sheet). It averages 9.8% for RMS Gloucester and generally sits between 8.5% and 10.5% for the other companies. It is a weighted average of the all-in cost of senior and subordinated debt. In the case of RMS Gloucester, there are two tranches of senior debt: a guaranteed, secured bond with a reported coupon of 9.18% (Highways Agency, 2002) and a loan from the European Investment Bank (EIB). Subordinated debt is provided by the sponsors. The interest rate on debt is a key component of the Weighted Average Cost of Capital (WACC) – discussed below.

Another input into the WACC is the Return on Equity. Here it is calculated as Net Income (recorded profit) divided by Shareholders' Equity. At 16%, the average value for RMS Gloucester sits towards the lower end of the range

observed across the other PFI road operating companies (15% - 30%). These high equity returns are inflated for two reasons. First, when the early PFI road projects reached financial close, the PFI was still in its infancy and risks were only starting to become understood. Second, unlike later deals, these early projects transferred traffic risk to the private sector. Today, the Treasury expects PFI equity returns generally to sit in the lower and narrower range of 13% - 18%.

The final component of the WACC is the Gearing Ratio. This is simply Total Debt divided by Total Debt + Shareholders' Equity. For RMS Gloucester it averages 86% and the other companies sit in the range 85% - 95%. These are far above the figures generally observed for corporate entities even at non-investment grade ratings (see Table 4). Only through the use of a highly structured product such as project finance could the road operating companies issue so much debt yet still achieve investment grade credit ratings.

The WACC is calculated by multiplying the various sources of finance by their respective rates and totalling the amounts:

$$\text{WACC} = (\% \text{ Debt} * \text{Cost of Debt}) + (\% \text{ Equity} * \text{Cost of Equity})$$

The accounting data from each of the early PFI roads³ are consolidated in Table 5 for the period 2001 (when steady-state operations had commenced across the whole portfolio) to 2006 (the last full year for which information is available).

Table 5: The First Eight PFI Roads: Cost of Capital

Aggregate Statistics	£ millions (unless percentages)						Ave.
	2001	2002	2003	2004	2005	2006	
Interest expense	84.0	84.0	81.0	76.8	74.7	71.4	
Short-term debt	23.7	35.1	36.2	42.1	45.2	48.1	
Long-term debt	857.4	880.2	860.4	820.7	783.0	742.3	
Interest rate debt	9.5%	9.2%	9.0%	8.9%	9.0%	9.0%	9.1%
Net income	17.1	19.6	18.1	20.0	22.4	22.6	
Ordinary equity	61.2	68.9	60.4	65.3	69.5	74.3	
Return on equity	28.0%	28.4%	30.0%	30.6%	32.2%	30.4%	29.9%
Gearing	92.5%	91.2%	92.2%	91.4%	91.4%	89.3%	91.3%
WACC	10.9%	10.9%	10.7%	10.8%	11.0%	11.3%	10.9%

This suggests that the weighted average cost of capital (WACC) – the cost of using private finance – across the Highways Agency's first eight PFI roads – is 10.9%.

$$\text{HA Programme WACC} = (91.3\% * 9.1\%) + ((1 - 91.3\%) * 29.9\%) = 10.9\%$$

5. RESULTS

Intuitively a figure of 10.9% makes sense. If 60% of senior debt is a guaranteed bond with a coupon of around 9.2%, costs associated with this bond (including provision of the guarantee, margin and arrangement fees) could be expected to inflate the all-in rate to nearer 9.95%. The all-in costs associated with the remaining 40% of senior debt (say an EIB loan) could be around 9.25%. At the time, sponsor loans (subordinated debt) were priced at around 12% and equity at nearer 20%. These assumptions are reflected in Table 6 which gives a WACC of 10.7% – exactly the average calculated for RMS Gloucester and very close to that calculated for the Highways Agency’s early PFI roads portfolio as a whole.

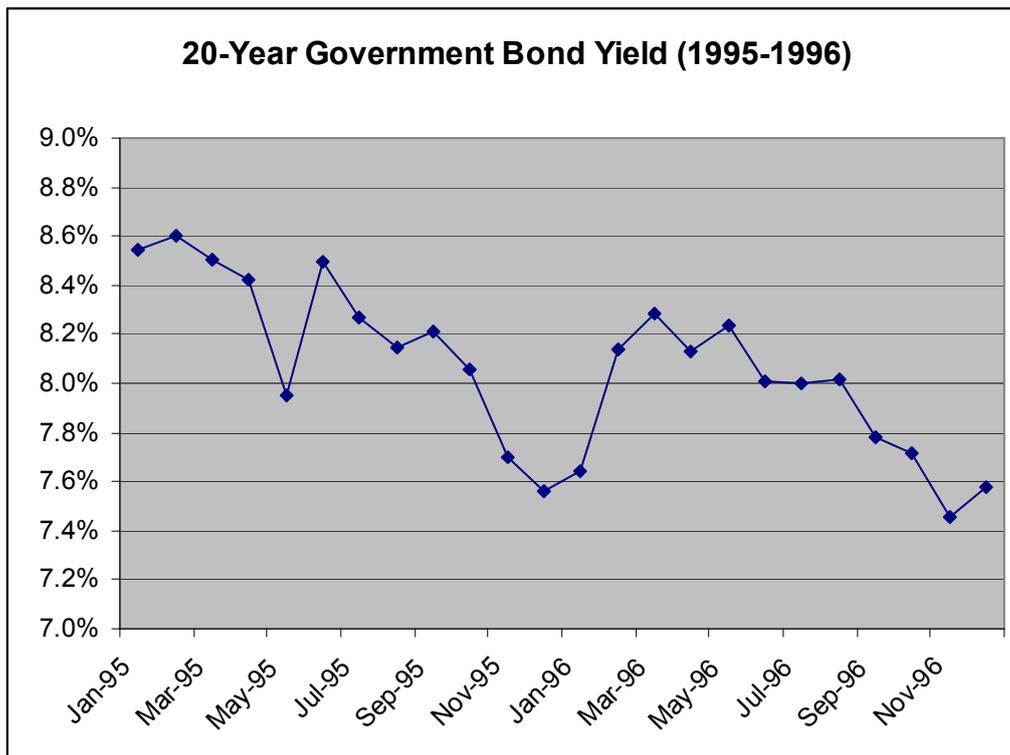
Table 6: Early PFI Roads Financing Cost Assumptions

	% of Capital Structure	Totals	All-In Rate	% * Rate
Senior Debt				
Bond	50%		9.95%	5.0%
EIB Loan	34%		9.25%	3.1%
Total Senior Debt		84%		
Subordinated Debt				
Sponsor Loans	8%		12%	1.0%
Total Debt		92%		
Equity				
True Equity	8%		20%	1.6%
Total		100%		10.7%

Looking across all of the years, the calculated WACC for the early PFI roads sits in the range 10.5% - 11.5%. This finding is consistent with the WACC derived earlier by Edwards et al (2004) from the smaller set of published accounts for PFI road operating companies (11%).

Considering their private finance calculations, Edwards et al conclude that their figures were “...considerably higher than the cost of Treasury stock, currently about 4.5%”. Their report was published in 2004 and data from the Debt Management Office ⁴ about gilt market auctions confirms that, around 2003 and 2004, long-dated Treasury notes were indeed attracting interest rates of around 4.25% - 4.75%. However, Figure 5 demonstrates that, back in 1995/96 when these privately financed roads were reaching financial close, gilts were yielding between 7.5% and 8.5%. This narrows the cost differential considerably. With a WACC range of between 10.5% and 11.5%, and gilts at between 7.5% and 8.5%, the private finance premium for these early PFI roads would appear to lie somewhere between 2% and 4%; not above 6% as suggested by Edwards et al.

Figure 5: Long-Dated UK Gilt Stock Yields (1995-1996)



Source: Bloomberg

At first sight, a private finance premium of around 3% still appears to be a significant cost of capital differential. However it is worth considering exactly what this means in the context of an average PFI road project. The average capital value across the first eight PFI roads was around £90 million. The repayments on £90 million borrowed over 20 years at 8% sum to £181 million. Using a figure of 11%, the repayments increase to £223 million (23% higher). However the construction works associated with a PFI road project represent only part of the contractual obligations passed to the private sector. A significant proportion of the obligations stem from ongoing operating and maintenance obligations (for which no private finance is required). Analysis of the early road public sector comparators demonstrates that, on average, the capital values represented around 27% of the total project values. Thus the 23% higher cost of capital impacts on only 27% of the project costs, meaning that across the Highways Agency's early PFI roads portfolio, the private finance premium added around 6% to total project costs.

In their 2000 report, 'Value for Money Drivers in the Private Finance Initiative', Arthur Andersen et al make similar calculations regarding private finance costs – albeit in the context of a hypothetical, illustrative example of a PFI project – and report two findings:

“A conventional procurement therefore would...have a small cost advantage over a maximum of a little over a quarter of the total project cost.”

“The gap between the cost of private sector capital and public borrowing...is not as high as some of the literature suggests.”

The research results presented here – based on ex post evidence from the PFI roads sector – support these important findings. Following on, Arthur Andersen concludes that *“Private finance may represent an additional cost, but it is not such a significant cost that value for money is inherently likely to be imperilled.”* Although the cost premium associated with private finance is widely discussed (and frequently criticised) in the literature, relatively few attempts have been made to size or calculate it. Some notable exceptions are presented – alongside the results from this research – in Table 7.

Table 7: Private Finance Cost Premium – Evidence

Private Finance Cost Premium	Source	Date	Comments
2% - 4%	Bain	1995-96	Early PFI shadow toll roads
1% - 3%	Arthur Andersen	2000	Average PFI project
1.6%	Public Accounts Committee	2005	London Underground PFI projects

Of note is the fact that, since the mid-1990s, the cost of capital differential of using private finance has reduced as the private sector has gained more experience of PFI projects and their risk characteristics. Similar findings are reported in the United States from contemporary comparisons of privately- and publicly-financed toll roads (Poole & Samuel, 2008). Writing recently (July 2008), Poole states that:

“One argument raised by some critics of private toll roads financed under long-term concession agreements is that their cost of capital must be dramatically higher than that of public-sector toll roads. Today’s financing opportunities for private sector toll roads enable them to come very close to the weighted average cost of capital that is available to long-established public-sector toll agencies. Positing a major difference in (the) cost of capital between the two options should no longer be taken seriously as an argument.”

No suggestion is made here that the cost of capital differential between public and private finance should be ignored. The conclusions from the analysis reported in this paper are that there is a cost of capital gap – although it appears more modest than the literature often suggests. Under the PFI, this differential needs to be compensated for by private sector efficiencies through improved investment planning, the introduction of innovation and synergies in design, construction and operations, and better management of project risks.

6. LIMITATIONS OF THIS RESEARCH

This paper presents an accounting analysis where the weighted average cost of capital for the road operating SPVs was calculated as a proxy for the cost, to the public sector, of using private finance. This represents an incomplete approach. The SPVs are only part of broader set of companies involved in PFI contracts and act primarily as financial conduits. Calculating the full cost to the public sector of using private finance would involve analysing the financial performance of the full set of companies. For example, SPVs typically subcontract other subsidiaries of their parent companies to undertake construction works and fulfil their O&M obligations. Financial analysis of PFI costs should therefore extend to these subcontractors.

There is also the issue of refinancings. All of the early PFI roads that were bank financed have been refinanced however there is no requirement for any of that information to be presented in annual accounts – therefore it has not been analysed here. However full financial analysis should take account of refinancing gains. There are additional complications regarding any interest paid to parent companies' finance subsidiaries and the up-streaming of loans (on preferential terms) to parents or other siblings within the corporate family which are not taken into account when looking at SPV accounts alone. The accounting analysis presented here builds upon and extends the work of Edwards et al (2004) and they, too, acknowledge the shortcomings of this approach. However the SPV accounts are, in many cases, the only financial information about PFI companies in the public domain and at least provide a partial insight into the financial standing of these key participants in the UK's PFI roads sector.

7. DISCUSSION

The accounting analysis presented here represents the most comprehensive investigation to date to be carried out into the published financial statements of PFI road operating project companies. The results suggest that the early PFI roads incurred a cost premium (over public sector funding) of around 2% - 4%. This is lower than some of the literature has previously reported, and is lower still when placed in the important context of overall project capital and recurrent costs – to which it adds a relatively modest total of around 6%. Accompanying evidence suggests that the cost premium has narrowed since the mid-1990s such that the differential is even lower today.

Key cost components include the interest rate on debt (including sponsor-provided subordinated debt) and the rate of return on equity. Much has been written about PFI equity returns – often critical of what are perceived to be super-profits being made at the public sector's expense. Certainly a wide range of equity returns, from 15% to 30%, were computed from the accounting analysis undertaken as part of this research however higher-than-average returns would be expected to be found in a sector like roads; wherein financiers are exposed to demand (traffic) risk. Notwithstanding, the fact that earlier PFI road refinancings led to relatively small gains (NAO, 2006) does not support the notion of super-profits or the potential for them to be made.

One point about PFI project equity is worth noting – as the subject commonly receives a rather simplistic treatment in the literature. A number of commentators dismiss high equity returns as simply being greed on behalf of the equity providers – without understanding that the equity component of a project’s capital structure and its rate of return are, in part, dictated by the providers of senior debt and their coverage ratio requirements. Equity is the cushion that takes the first-loss position and its size will dictate the terms upon which senior debt is provided. Calls for equity to be contained (or for it to be removed from capital structures altogether) fail to recognise that, in doing so, senior debt margins would face upward pressure, probably off-setting much of saving to the public sector. The findings reported earlier support a view which rarely appears in the PFI literature – that the interplay between debt and equity works against simple capital structure ‘fixes’ designed to reduce the costs to public sector procuring agencies.

In truth, the issue of disproportionately high equity returns is difficult to prove or disprove for two key reasons. The first is that the road operating companies are still only one-third of the way through their concession terms and a lot can happen over the next 20 years – especially when many of the returns are back-ended. Comprehensive profitability analysis will only be able to be undertaken once the companies have discharged their contractual obligations in full. The second reason concerns the accounts themselves. As currently presented, there is a lack of transparency about the workings of the PFI project companies that makes it difficult (sometimes impossible) to conduct any meaningful form of traditional corporate financial analysis at a detailed level. Despite the government’s commitment to openness and accountability, in the case of PFI companies, voluntary disclosure, by itself, has its limitations in terms of facilitating public scrutiny. It should be possible – despite commercial sensitivities – for the public to be able to understand the financial performance of private companies providing key public services – such as road infrastructure – under important government initiatives such as the PFI; but it is not. One remedy would be for the issue of disclosure to be strengthened contractually in terms of future deals with the adoption of a voluntary code of practice (a similar approach as used for refinancing gain sharing) covering existing projects and the information they release into the public domain.

Notes

1. An alternative approach, adopted latterly by Autolink Concessionaires (A19) Ltd. (in accordance with FRS5) is known as the finance debtor approach. This explains why a number of more recent PFI project company accounts fail to show their respective assets as Fixed Assets on their balance sheets.
2. http://www.hm-treasury.gov.uk/documents/public_private_partnerships/ppp_pfi_stats.cfm
3. The accounts for Autolink's A19 project have been excluded from this analysis. Two complications – the fact that the project was refinanced in 2000 and that accounting policy was changed in 2001 – introduced discontinuities and inconsistencies in comparison with the other company accounts.
4. The Debt Management Office is an executive agency of HM Treasury. Its responsibilities include debt and cash management for the UK Government.

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