

# Listed proxies of private infrastructure equity

## Performance, risk measures and representativity

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A contribution to the EIOPA consultation on the calibration of infrastructure  
investment in Solvency-2



**Frédéric Blanc-Brude**

Director, EDHEC *infra*

**Tim Whittaker**

Head of Data, EDHEC *infra*

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## Executive summary

This short note reviews several candidates for a public market proxy of privately-held infrastructure equity investments in the context of calibrating the Solvency-2 framework and with a focus on measures of market correlation, systematic risk and extreme risk. Key results are summarised in this executive summary.

### Listed infrastructure indices

We test the performance of various global industry-provided thematic stock indices relative to the global market index of reference in the Solvency-2 framework: MSCI World.

These indices outperform the market benchmark but exhibit drawdown risk and tail risk of a similar magnitude as well as very high levels of correlation with the stock market at all points in the business/credit cycles.

Better performance relative to the highly inefficient MSCI World index can be attributed to an implicit "value" factor represented by infrastructure firms.

Such indices provide no support for a different treatment of infrastructure, defined in the same manner as the index providers do, under Solvency-2.

### Listed infrastructure stocks

Next, we replicate an approach developed in the literature which consists of selecting stocks by sectors and levels of income generated from infrastructure activities, which we set at 90%, which we call the naïve approach to selecting infrastructure investments. Under this definition, infrastructure investments are solely a matter of exposure to certain industrial sectors.

As for infrastructure indices, we report price and total returns, and find that under this definition, infrastructure again fails to exhibit any of the characteristics that would warrant a specific treatment under Solvency-2: drawdown and tail risks are higher than the market's and return correlations remain very high and statistically significant.

We note that worst drawdown, volatility and 99.5% VaR of listed utilities for example, is also on par with levels seen with the broad market index.

### The PFI portfolio

Finally, defining infrastructure exposure not by sector but by contractual arrangement involving the creation of dedicated project vehicles using a project finance model, we review the performance of five stocks listed on the LSE.

These five stocks provide a quasi-pure exposure to more than 280 individual equity stakes in a single type of infrastructure investment scheme: the PFI (private finance initiative) in the UK and its equivalent in other OECD jurisdictions.

Under this definition, with highly predictable contracted income, the reference portfolio exhibits a very different behaviour than the market benchmark (in this case FTSE all shares) or a sector-based infrastructure index like the ones discussed above.

The PFI index has very little correlation with market on a price return basis, and no correlation at all (market beta of zero) on a total return basis. This is due to the high payout ratio of these stocks combined with the frequency of payouts and the fact that dividend targets are always met. The firms in questions also have almost no leverage at the listed entity level. As a consequence, drawdown and tail risks are much lower than than the market index.

This profile could warrant a specific treatment under solvency-2: on a annual basis, the 99.5% VaR of the PFI portfolio is effectively zero. On a monthly basis, it is about half of the market's. **It follows that the SCR for such investments could be at least halved.**

It should be noted that PPP structures with availability/contacted income such as these are one of the main models used to deliver new infrastructure in Europe.

# 1 Infrastructure equity indices

Table 1: Annualised price returns, global infrastructure indices

	Brookfield	SandP	FTSE Macq	FTSE Core	MSCI	MSCI ACWI	UBS	UBS 50-50	MSCI World
ann. return	0.1117	0.072	0.0428	0.0634	-0.0199	0.0252	0.0464	0.0545	0.0124
ann. risk	0.1316	0.1528	0.1379	0.1147	0.1449	0.1047	0.1187	0.1447	0.1584
ann. Sharpe ratio	0.8066	0.4362	0.273	0.5066	-0.1714	0.1916	0.3468	0.3407	0.0465

Table 2: Annualised total returns, global infrastructure indices

	Brookfield	SandP	FTSE Macq	FTSE Core	MSCI	MSCI ACWI	UBS	UBS 50-50	MSCI World
ann. return	0.1425	0.1135	0.0786	0.0931	0.0173	0.062	0.0838	0.0895	0.0364
ann. risk	0.1307	0.1518	0.1372	0.1133	0.1446	0.1044	0.1186	0.1442	0.1587
ann. Sharpe ratio	1.0473	0.7113	0.5337	0.7737	0.0849	0.5437	0.6615	0.583	0.1969

Requirements to be included in the listed infrastructure indices created by index providers include

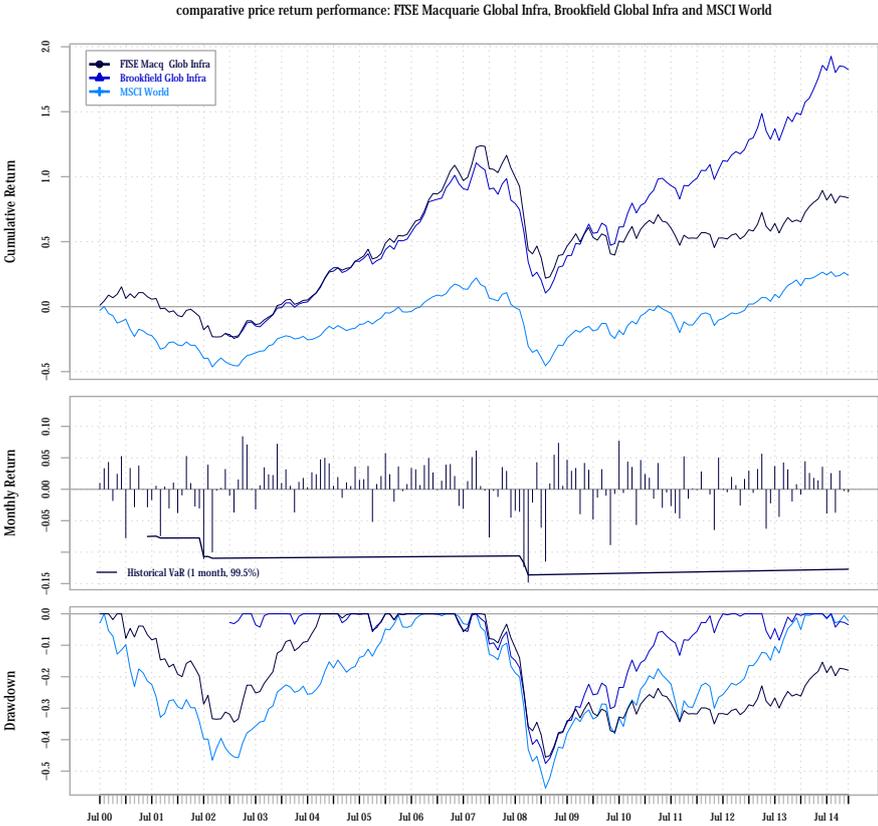
- be part of a broader index universe (this is usually part of the infrastructure universe of the index provider)
- a minimum amount of revenue must be derived from infrastructure activities

This minimum revenue requirements and the definition of infrastructure activities are set differently by each index provider.

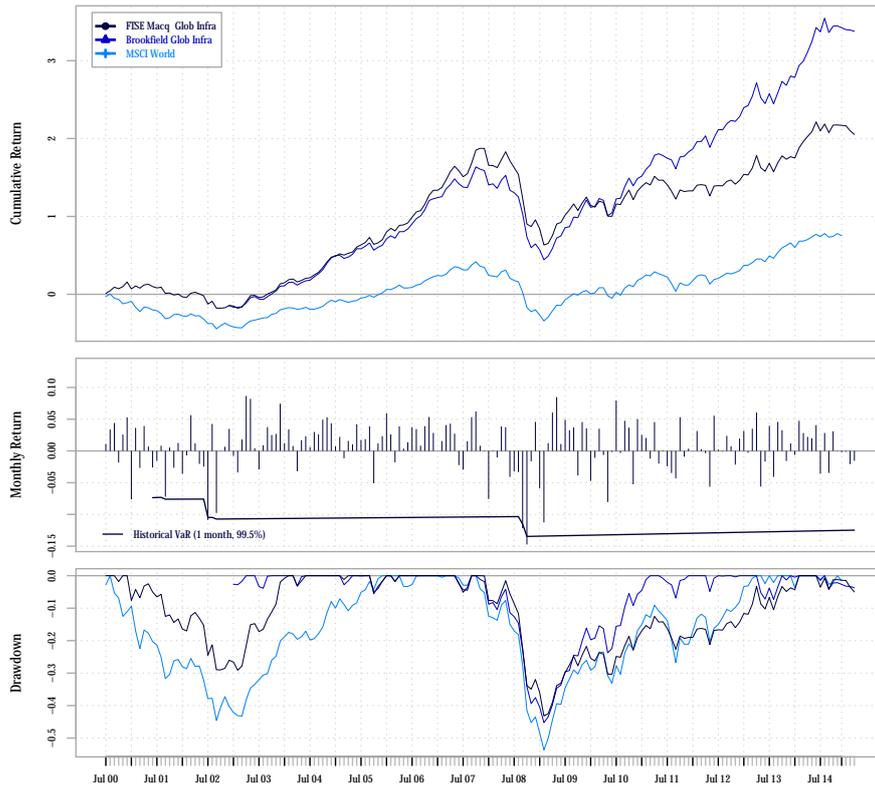
- The objective of the Dow Jones Brookfield Global Infrastructure index (Standard & Poor's, 2014) is to measure the market capitalisation weighted performance of so-called "pure play" infrastructure firms. Beginning 31 December 2002, as at September 2014 it comprised 96 firms. To be included in the index, firms must derive more than 70% of their revenues from infrastructure related businesses.
- The FTSE Macquarie Global Infrastructure Index, is a market cap-weighted index (FTSE Group, 2014) comprising 247 stocks in 48 countries as of September 2014. To be included in the index stocks are screened to ensure that they are engaged in the management, operation and ownership of infrastructure and utility assets.
- The FTSE Global Core Infrastructure comprises companies within the FTSE Global All Cap index that derive more than 65% of their revenues from activities FTSE recognise as infrastructure related. Infrastructure is defined as "companies which own, operate, manage or maintain physical structures or networks used to process or move goods, services, information, people, energy and/or life essentials" (FTSE Group, 2012).
- The MSCI World Infrastructure Index comprises 146 listed stocks from developed markets as at September 2014. To be included, stocks need to be part of the MSCI World index. The stocks comprise five infrastructure sectors which are Telecommunications, Utilities, Energy, Transportation and Social. There is no upper limit on sectors within the index (MSCI, 2014).
- The MSCI ACWI Infrastructure Capped comprises 257 stocks as at September 2014. In a similar manner to the MSCI World Infrastructure Index all stocks must first be members of the MSCI ACWI index universe. The stocks are then split into Telecommunications, Utilities, Energy, Transportation and Social infrastructure categories and weighted in a manner that Telecommunications and Utilities stocks comprise a maximum of one third of the index each, with the remainder of the index comprising stocks within the Energy, Transportation and Social sectors (MSCI, MSCI).
- The UBS Global Infrastructure and Utilities and UBS Global 50/50 Infrastructure and Utilities were created in 2006. Both indices are part of the Global Infrastructure & Utilities Index series with a history

dating back to 1990. The UBS Global 50/50 Infrastructure and Utilities according to limits the contribution of the utilities sector to 50% of the total returns of the index, with infrastructure contributing to the other 50% of the index's performance. With the UBS Global Infrastructure and Utilities Index, there is no upper limit on the contribution of utilities to the index's performance UBS (2006); Idzorek and Armstrong (2009).

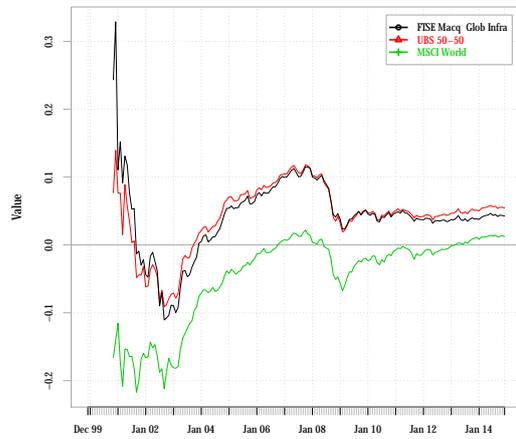
U.S. dollar price and total returns are sourced from Datastream.



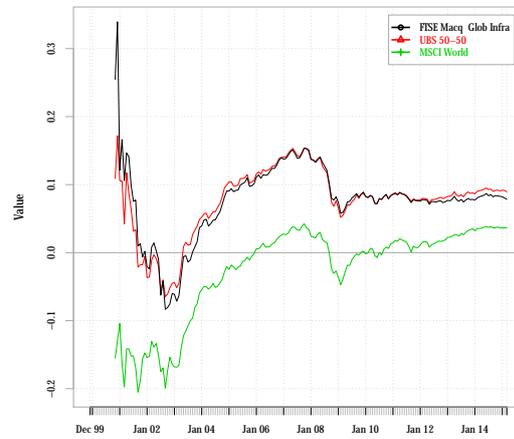
comparative total return performance: FISE Macquarie Global Infra, Brookfield Global Infra and MSCI World



rolling 12-month annual price returns



rolling 12-month annual total returns



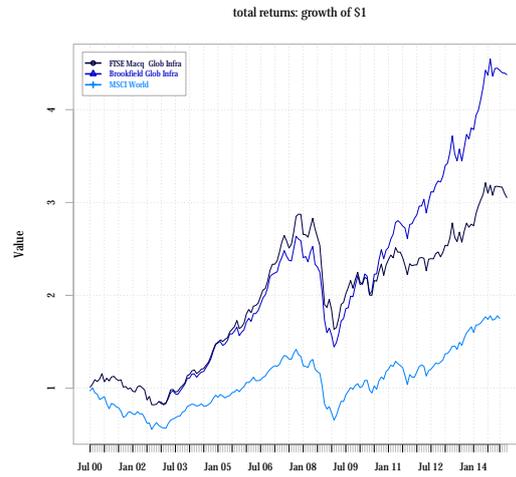
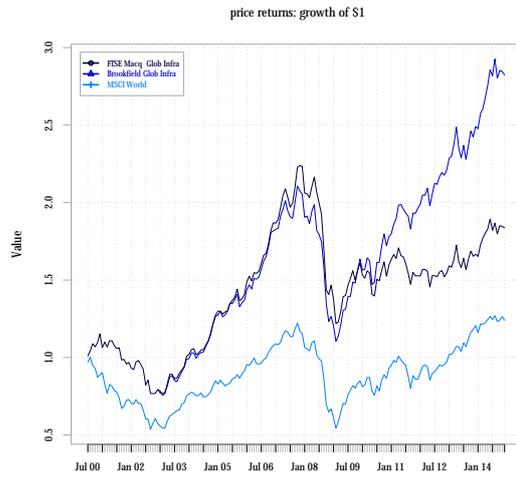


Table 3: Worst\* drawdown, price returns

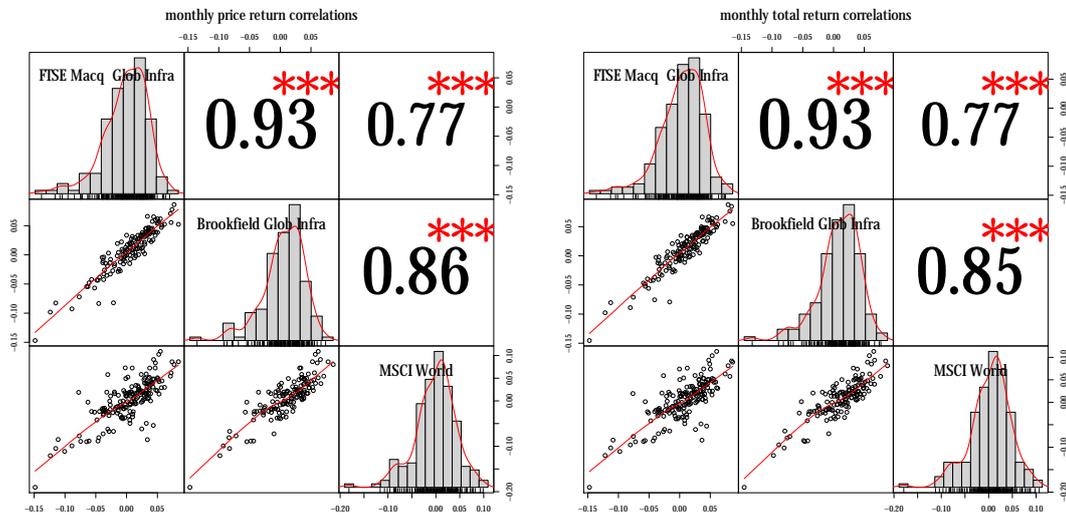
	Brookfield	SandP	FTSE Macq	FTSE Core	MSCI	MSCI ACWI	UBS	UBS 50-50	MSCI World
Worst Drawdown	0.48	0.55	0.46	0.37	0.66	0.42	0.45	0.51	0.55

\*measured as a percentage of that maximum cumulative return, in effect, measured from peak equity

Table 4: Worst\* drawdown, total returns

	Brookfield	SandP	FTSE Macq	FTSE Core	MSCI	MSCI ACWI	UBS	UBS 50-50	MSCI World
Worst Drawdown	0.45	0.53	0.43	0.35	0.64	0.40	0.43	0.48	0.54

\*measured as a percentage of that maximum cumulative return, in effect, measured from peak equity



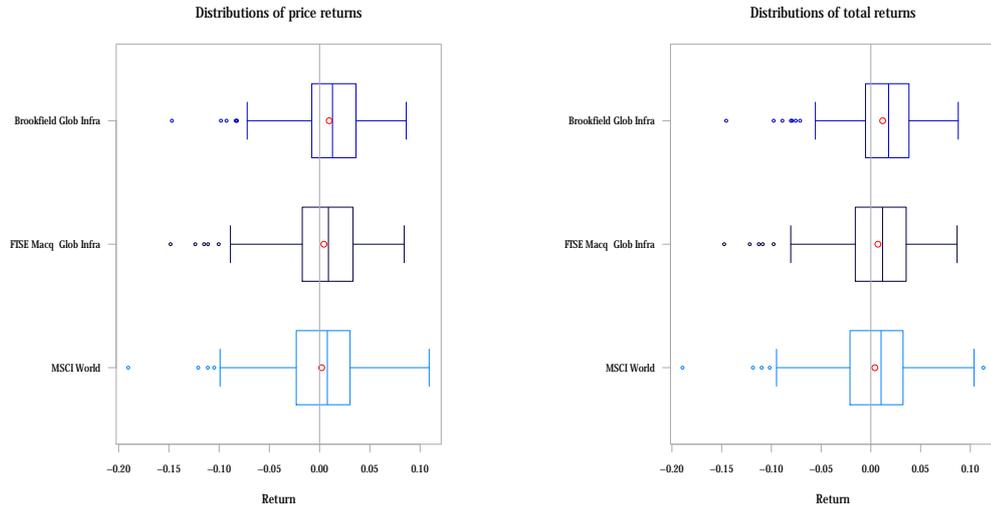


Figure 1: Comparative VaR sensitivity, monthly price returns

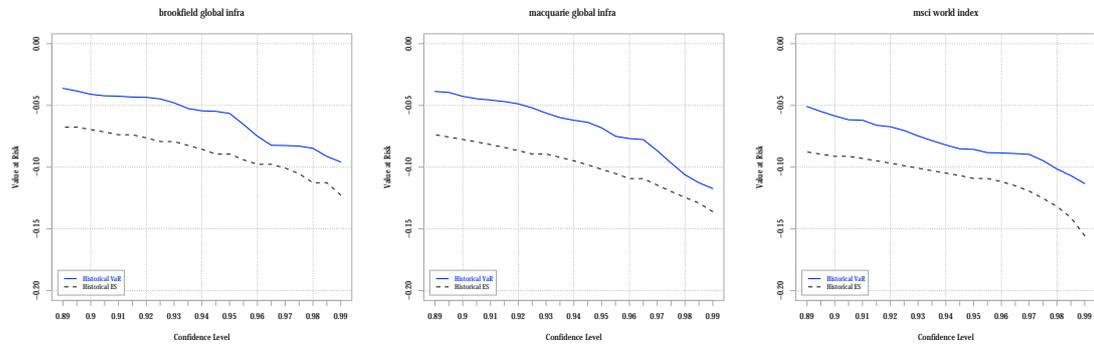
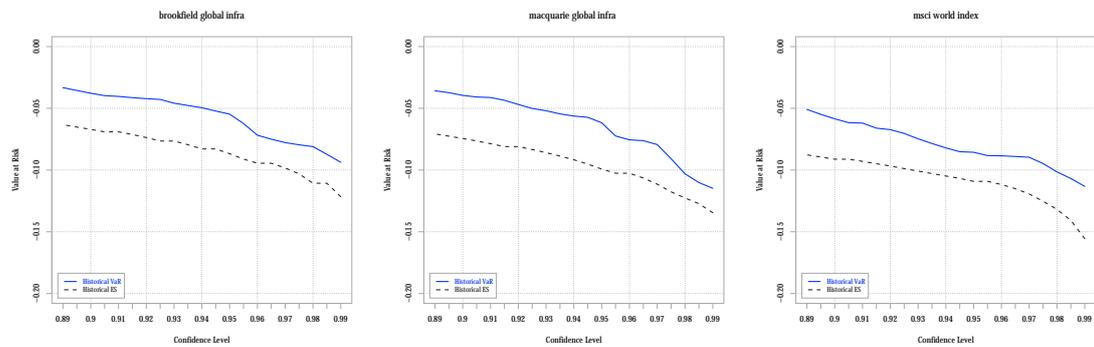


Figure 2: Comparative VaR sensitivity, monthly total returns



## 2 Infrastructure stocks

Table 5: Annualised price returns

	Telecom90	Transport90	Utilities90	MSCI World
ann. return	-0.0854	0.0422	0.0016	0.0124
ann. risk	0.1746	0.1802	0.1327	0.1584
ann. Sharpe ratio	-0.5153	0.2052	-0.0253	0.0465

Table 6: Annualised total returns

	Telecom90	Transport90	Utilities90	MSCI World
ann. return	-0.0508	0.088	0.0384	0.0124
ann. risk	0.1762	0.1791	0.1332	0.1584
ann. Sharpe ratio	-0.3151	0.4613	0.2493	0.0465

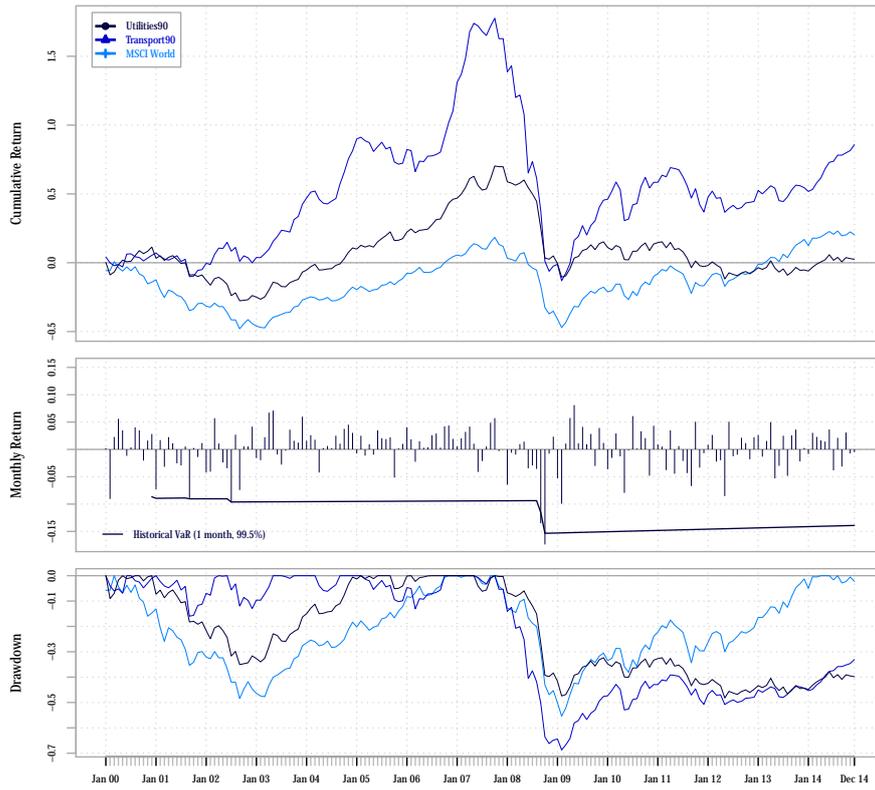
This asset selection scheme is used to represent the "naïve" definition of infrastructure equity investment, and follows the methodology described by Rothballer and Kaserer (2012): following broad industry definitions to determine infrastructure-related stocks. All stocks with a SIC or GIC codes related to infrastructure in Worldscope.

5,757 possible securities are thus identified as "infrastructure-related". Next, only stocks for which the majority of the revenue was obtained from sectors with infrastructure activities (as defined by SIC code) are kept in the sample. A minimum market capitalisation of \$US500 Million is required to be included in our sample. This yields 1,290 firms with at least 50% of income from infrastructure activities. We set the minimum infrastructure revenue threshold in our sample to 90%, which yields 554 stocks. The number of firms identified as well as their geographic and industry distributions are reported in table 13 in the appendix.

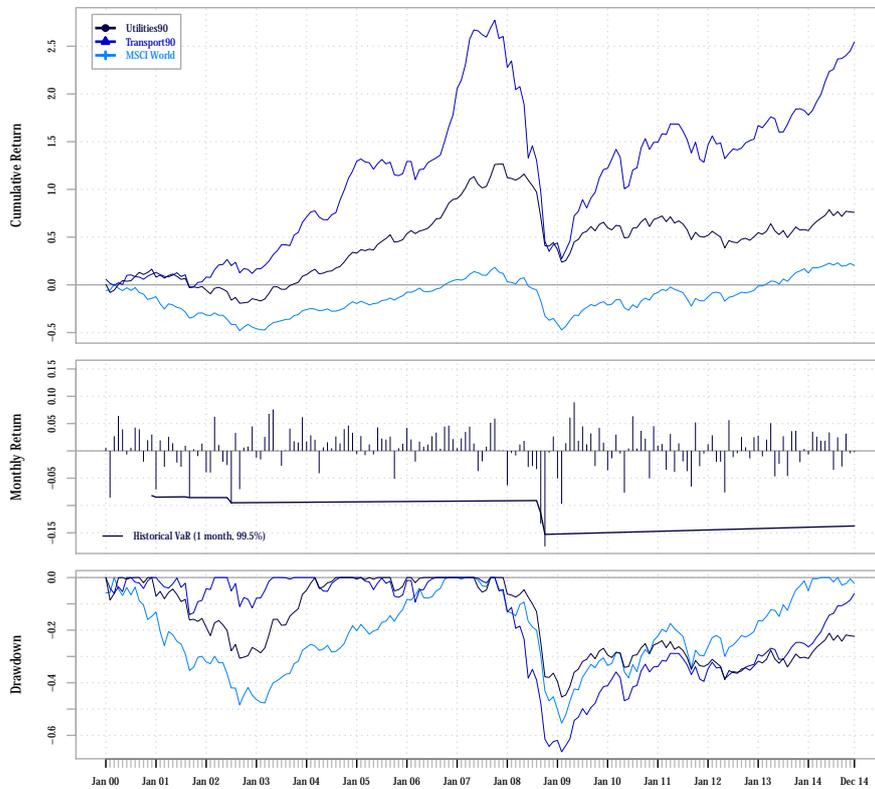
As above, U.S. dollar price and total returns are sourced from Datastream. the methodology described in Ince and Porter (2006) is employed in preparing the data for analysis. <sup>1</sup>

<sup>1</sup> - Extreme monthly returns are identified following Ince and Porter (2006) and set to a missing value. Ince and Porter (2006) sets an arbitrary cut off of 300% for extreme monthly returns. If  $R_t$  or  $R_{t-1}$  is greater than 300% and  $(1 + R_t)/(1 + R_{t-1}) - 1$  is less than 50% then  $R_t$  or  $R_{t-1}$  are set to missing. Furthermore, following Rothballer and Kaserer (2012), 18 months of non zero returns are required for the stock to be included in the portfolios. Any Datastream padded price is removed by requesting X(P#S) \$U which returns Null values when Datastream does not have a record and any non equity item was removed by requiring the TYPE description in Datastream to be equal to EQ.

comparative price return performance: Utilities90, Transport90 and MSCI World



comparative total return performance: Utilities90, Transport90 and MSCI World



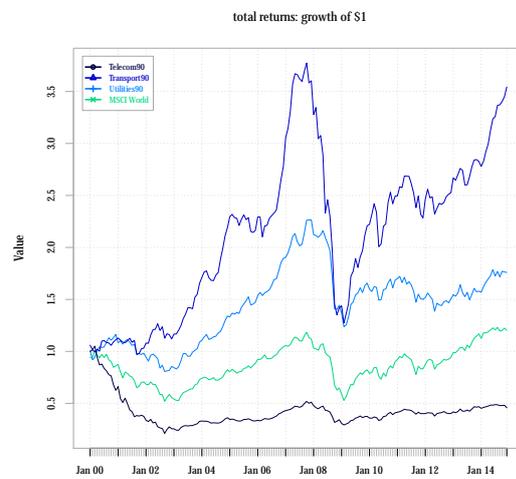
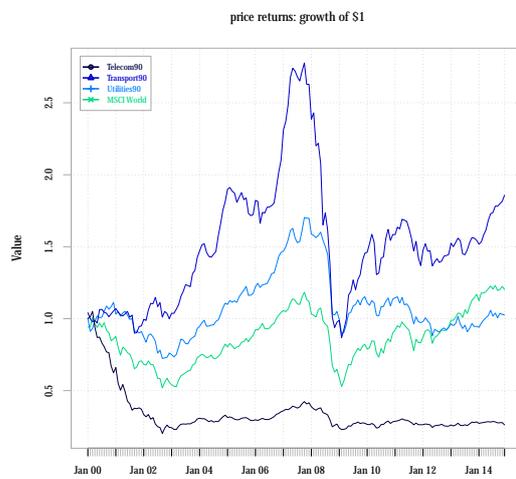
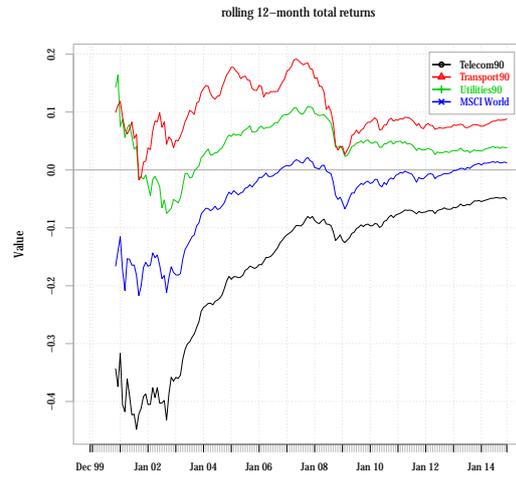
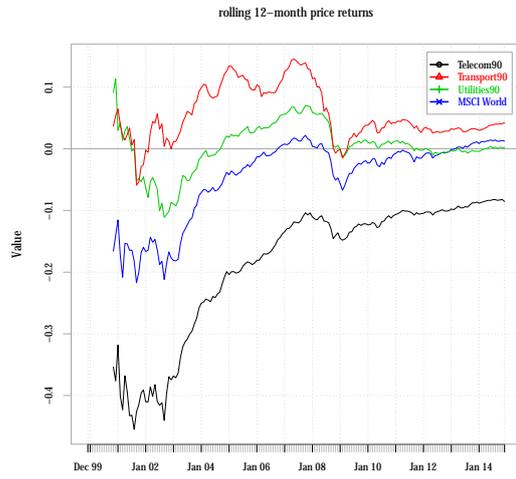


Table 7: Worst\* drawdown, price returns

	Telecom90	Transport90	Utilities90	MSCI World
Worst Drawdown	0.81	0.69	0.48	0.55

\*measured as a percentage of that maximum cumulative return, in effect, measured from peak equity

Table 8: Worst\* drawdown, total returns

	Telecom90	Transport90	Utilities90	MSCI World
Worst Drawdown	0.80	0.66	0.45	0.55

\*measured as a percentage of that maximum cumulative return, in effect, measured from peak equity

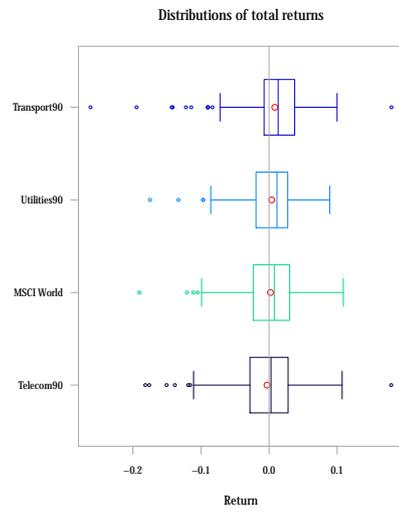
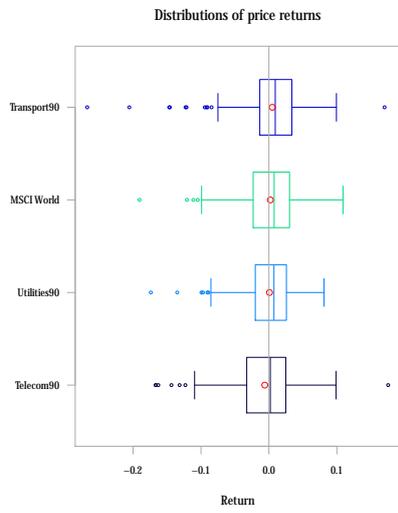
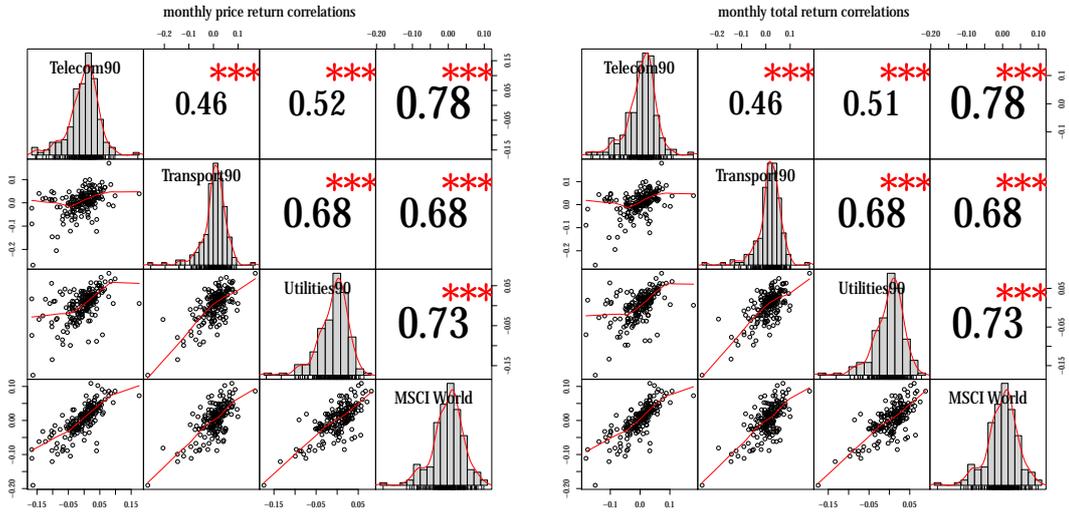


Figure 3: Comparative VaR sensitivity, monthly price returns

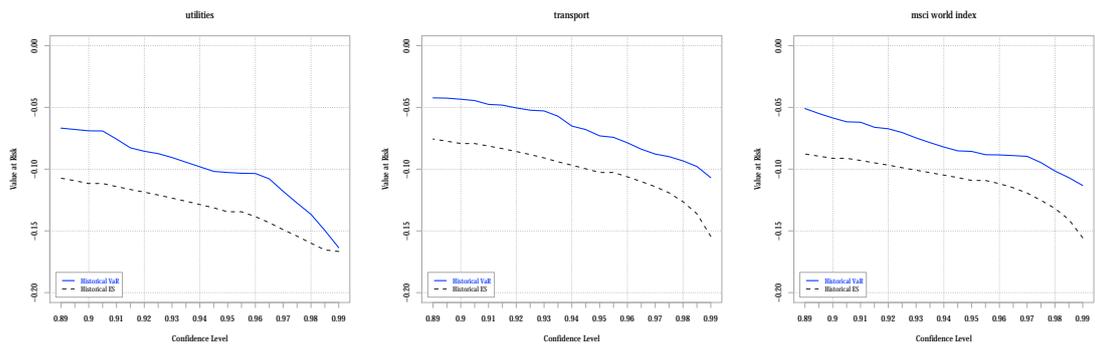
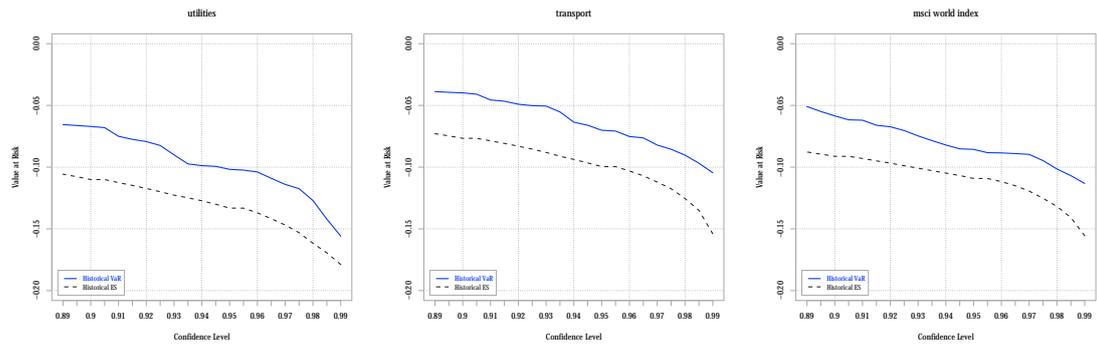


Figure 4: Comparative VaR sensitivity, monthly total returns



### 3 The PFI portfolio

Table 9: Annualised price returns

	pfi portoflio	ftse all shares	macquarie infra europe
ann. return	0.0478	0.0271	-0.0067
ann. risk	0.0926	0.1817	0.181
ann. Sharpe ratio	0.4597	0.121	-0.0645

Table 10: Annualised total returns

	pfi portoflio	ftse all shares	macquarie infra europe
ann. return	0.1011	0.0648	0.0464
ann. risk	0.0817	0.1724	0.184
ann. Sharpe ratio	1.1708	0.3451	0.2237

The PFI portfolio consists of

1. HSBC Infrastructure Company Ltd (HICL)
2. John Laing Infrastructure Fund Ltd (JLIF)
3. GCP Infrastructure Ltd (GCP)
4. International Partnerships Ltd (INPP)
5. Bilfinger Berger Global Infrastructure Ltd (BBGI)

These firms are mostly occupied with buying and holding the equity and subordinated debt of PFI (private finance initiative) project companies in existence in the UK and that of similar firms mostly involved in delivering so-called availability-pay infrastructure projects, by which the public sector pays a pre-agreed income to the project firm on a regular basis in exchange for the construction/development, maintenance and operations of a given infrastructure project given a pre-agreed output specification and for several decades.

The PFI project companies in question do not enter into any other activities during their lifetime, and solely delivery the contracted infrastructure and associated services while repaying their creditors and investors. As such they give access to a "pure" infrastructure project cash flow, representative of the underlying nature of the PFI business model.

The firms in the PFI portfolio can be considered useful proxies PFI equity and quasi-equity investment because they engage (almost) solely into buying and holding such instruments and each have assets representing a large portfolio of underlying PFI projects. While the project companies are typically highly leveraged, the firms in the PFI portfolio were found not to be making a significant use of leverage. Hence, as a group, they can be considered to represented a listed basket of PFI equity stakes.

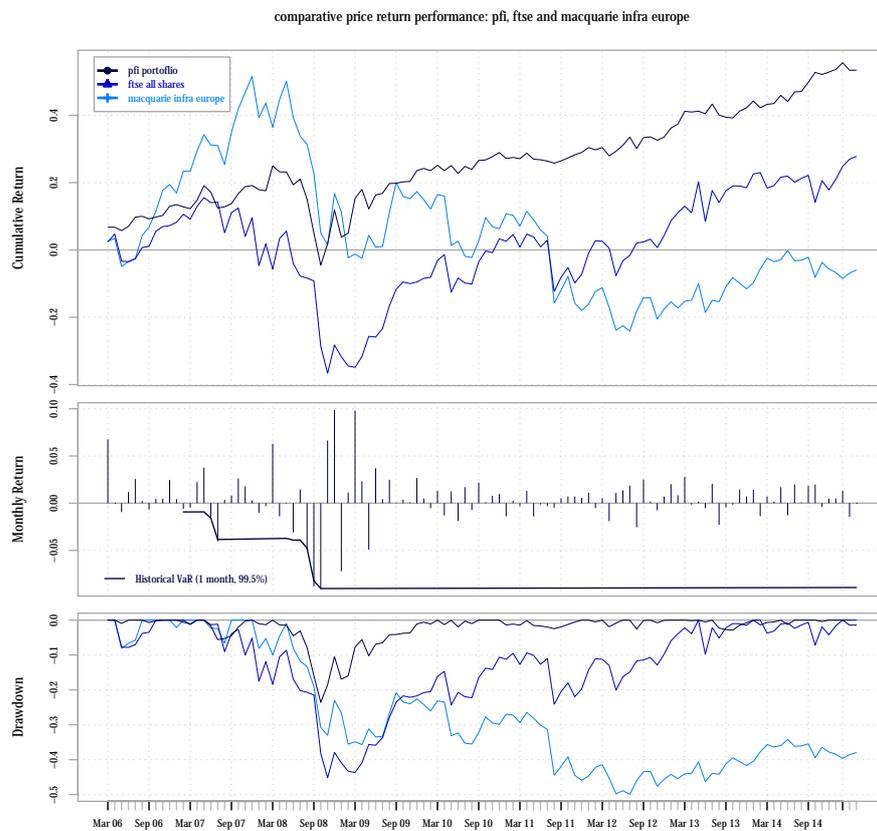
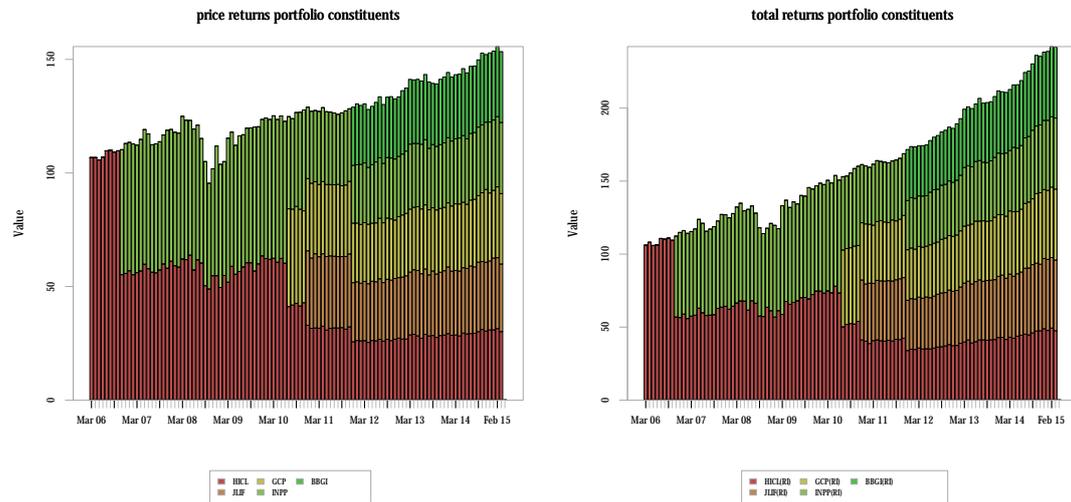
As a whole this "basket" of PFI equity stakes represents investments in at least 250 different infrastructure projects, as shown in the appendix. Together they represent a market valuation of GBP5.2bn in April 2015.

Insofar as they are representative of availability pay infrastructure equity investments, we expect such stocks to have a low market correlation and in particular to be insensitive to large market drawdowns. These stocks represent ownership rights into long-term, contractually defined cash flow streams with a

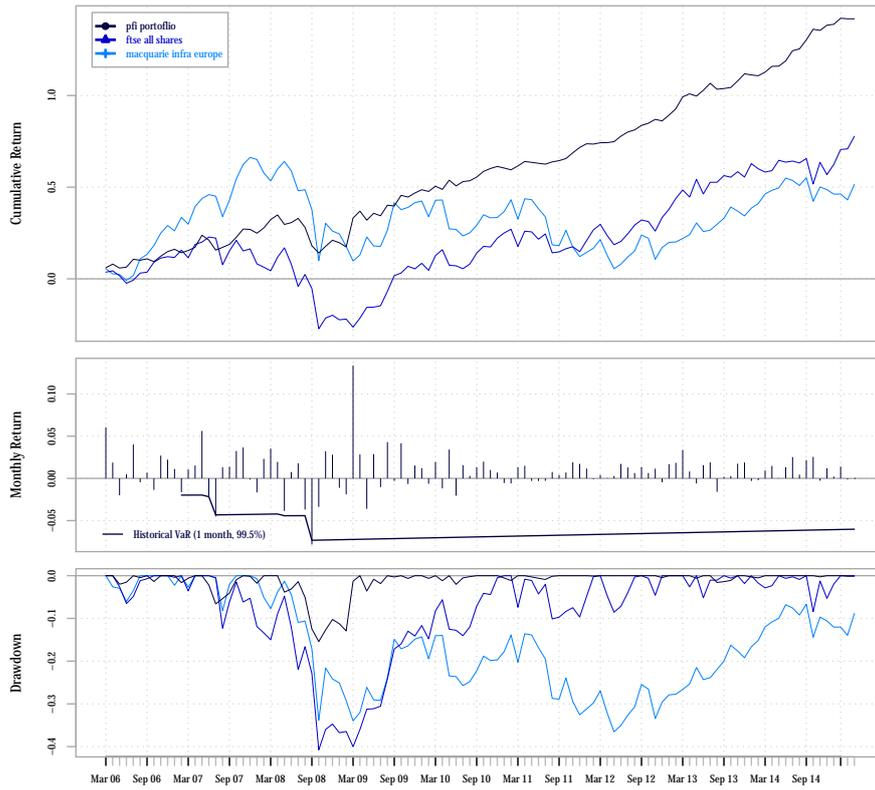
sovereign or quasi-sovereign counterpart in the OECD, as such they should have much lower value-at-risk (VaR) and expected shortfall (ES) and be less volatile both on the upside and the downside.

All returns are annualised monthly price and total returns computed in local currency (GBP) and sources fro datastream. The PFI portfolio is equal weighted (market cap weights were also tested, but did not change the overall results)

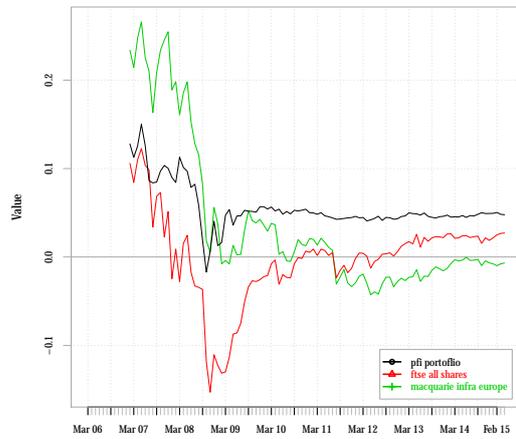
Figure 5: Value of pfi portfolio constituents



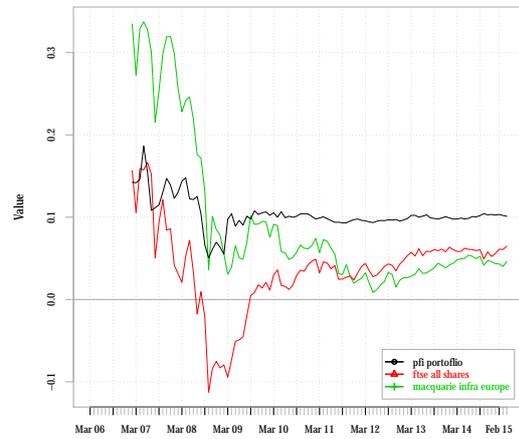
comparative total return performance: pfi, ftse and macquarie infra europe



rolling 12-month annual price returns



rolling 12-month annual total returns



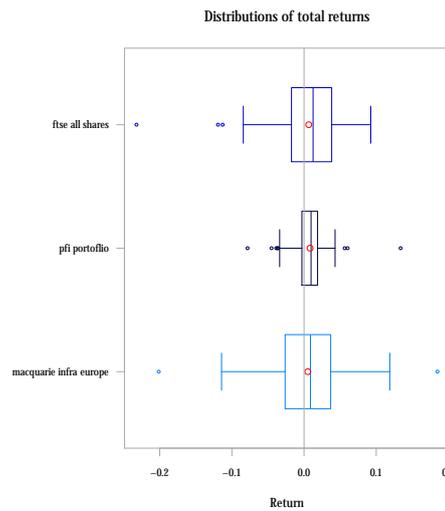
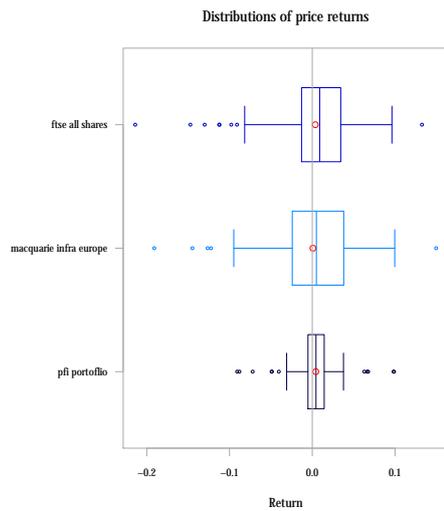
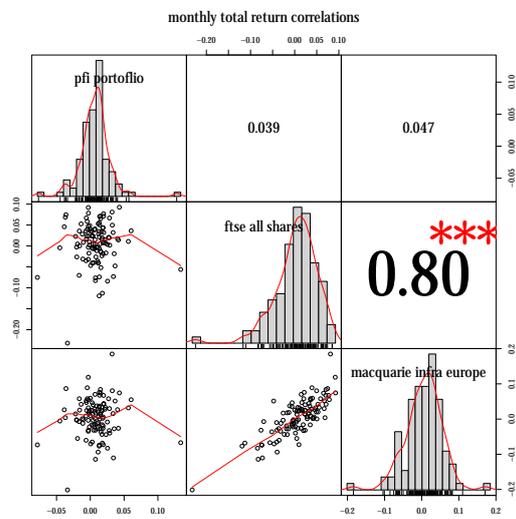
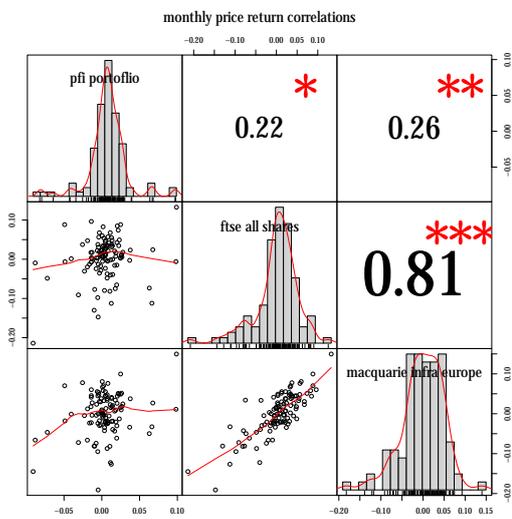
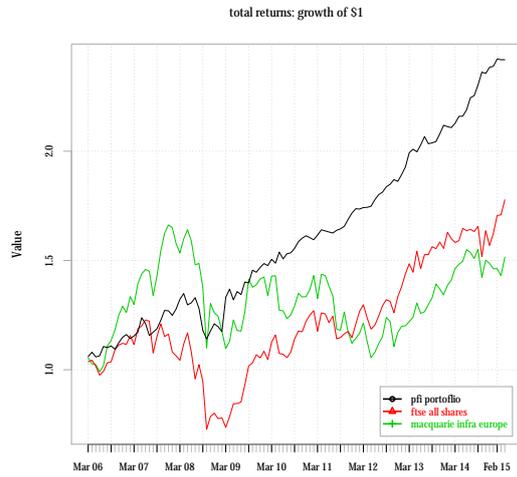
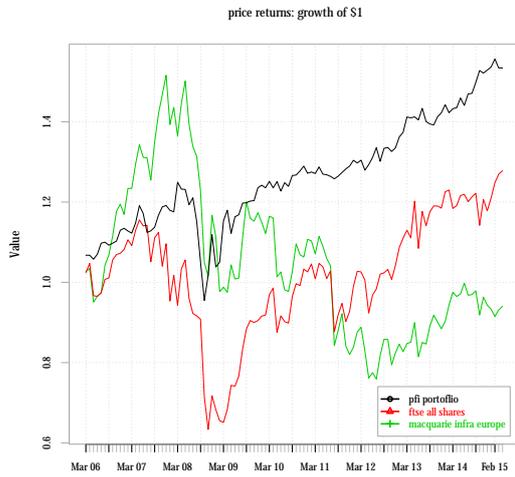


Table 11: Worst\* drawdown, price returns

	pfi portfolio	ftse all shares	macquarie infra europe
Worst Drawdown	0.24	0.45	0.50

\*measured as a percentage of that maximum cumulative return, in effect, measured from peak equity

Table 12: Worst\* drawdown, total returns

	pfi portfolio	ftse all shares	macquarie infra europe
Worst Drawdown	0.15	0.41	0.37

\*measured as a percentage of that maximum cumulative return, in effect, measured from peak equity

Figure 6: Comparative VaR sensitivity, monthly price returns

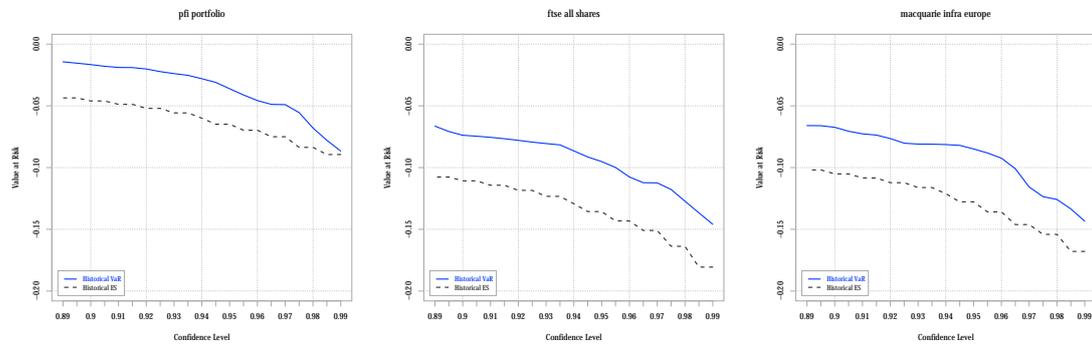
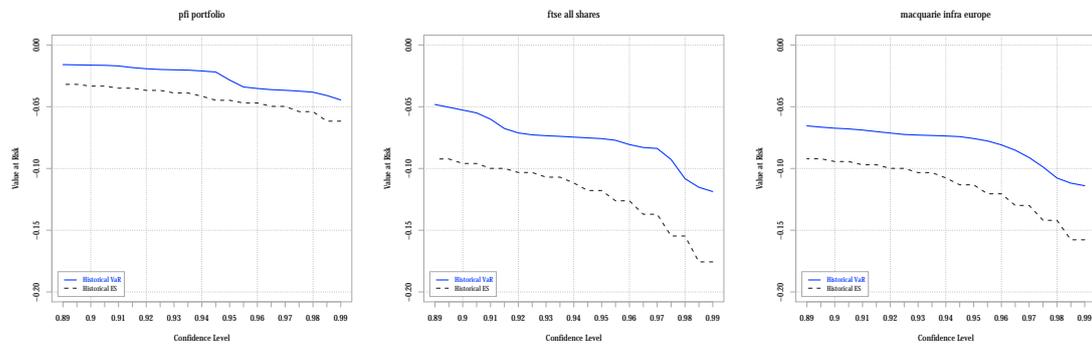


Figure 7: Comparative VaR sensitivity, monthly total returns



## 4 Appendix

### 4.1 The naïve infrastructure stock portfolio

Table 13: Geographic Split of Infrastructure Firms

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50 Percent Revenue Requirement Cutoff				
	Telecommunications	Transport	Utilities	Total
Africa-Middle East	35	6	21	62
Asia Pacific	111	107	292	510
Eastern Europe	22	5	76	103
Latin America	16	7	58	81
North America	97	21	181	299
Western Europe	72	30	133	235
Total	353	176	761	1290

75 Percent Revenue Requirement Cutoff				
	Telecommunications	Transport	Utilities	Total
Africa-Middle East	23	1	6	30
Asia Pacific	60	22	130	212
Eastern Europe	15	2	53	70
Latin America	8	1	19	28
North America	61	7	132	200
Western Europe	38	6	66	110
Total	205	39	406	650

90 Percent Revenue Requirement Cutoff				
	Telecommunications	Transport	Utilities	Total
Africa-Middle East	21	0	6	27
Asia Pacific	52	16	99	167
Eastern Europe	11	0	47	58
Latin America	4	1	17	22
North America	68	4	116	188
Western Europe	34	7	51	92
Total	190	28	336	554

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## 4.2 Underlying assets of the PFI portfolio

Table 14: List of underlying assets invested by the 4 listed entities in the PFI portfolio

Project name	Sector	Investor	Country	Revenue Source
A249 Road	Roads	HICL	UK	Unitary Charge
A92 Road	Roads	HICL	UK	Unitary Charge
Abbotsford Hospital	Hospitals	JLIF	Canada	Unitary Charge
Abingdon -Thames Valley Police	Gov Services	INPP	UK	Unitary Charge
Addiewell Prison	Gov Services	HICL	UK	Unitary Charge
Alberta Schools	Gov Services	INPP	Canada	Unitary Charge
Allenby and Connaught PFI Project, UK	Gov Services	HICL	UK	Unitary Charge
Angel Trains	Hospitals	INPP	UK	Unitary Charge
Aquasure Victorian Desalination Project, Australia	Gov Services	HICL	Australia	Purchase agreement
Avon and Somerset Courts	Gov Services	JLIF	UK	Unitary Charge
Barking and Dagenham PFI SPV 1	education	INPP	UK	Unitary Charge
Barking and Havering Clinics	Hospitals	BBGI	UK	Unitary Charge
Barking and Dagenham Schools	education	HICL	UK	Unitary Charge
Barnet and Haringey Clinics	Hospitals	BBGI	UK	Unitary Charge
Barnet Hospital, UK	Hospitals	HICL	UK	Unitary Charge
Barnet Street Lighting	Gov Services	JLIF	UK	Unitary Charge
Barnsley PFI SPV 1	education	INPP, JLIF	UK	Unitary Charge
Barnsley PFI SPV 2	education	INPP	UK	Unitary Charge
Barnsley PFI SPV 3	education	INPP	UK	Unitary Charge
BBG Lakeside	Hospitals	INPP	UK	Unitary Charge
Bedford Schools	education	BBGI	UK	Unitary Charge
BeNEX	Rail Link	INPP	Germany	unknown
Bentilee Hub Community Centre	Gov Services	JLIF	UK	Unitary Charge
Bexley Schools	education	JLIF	UK	Unitary Charge
Bexley, Bromley, Greenwich 1	Hospitals	INPP	UK	Unitary Charge
Bexley, Bromley, Greenwich 2	Hospitals	INPP	UK	Unitary Charge
BHH Mt Vernon	Hospitals	INPP	UK	Unitary Charge
BHH Sudhury	Hospitals	INPP	UK	Unitary Charge
Birmingham and Solihull LIFT	Hospitals	HICL	UK	Unitary Charge
Birmingham Hospitals	Hospitals	HICL	UK	Unitary Charge
Birmingham PFI SPV 1	education	INPP	UK	Unitary Charge
Bishop Auckland Hospital, UK	Hospitals	HICL	UK	Unitary Charge
Bistol PFI SPV 1	education	INPP	UK	Unitary Charge
Blackburn PFI SPV 1	education	INPP, HICL	UK	Unitary Charge
Blackburn PFI SPV 2	education	INPP	UK	Unitary Charge
Blackpool Primary Care Facility	Hospitals	HICL	UK	Unitary Charge
BMBF	education	INPP	Germany	Unitary Charge
Boldon School	education	HICL	UK	Unitary Charge
Bradford BSF Phase 2	education	HICL, INPP	UK	Unitary Charge
Bradford PFI SPV 1	education	INPP	UK	Unitary Charge
Brent, Harrow, Hillingdon	Hospitals	INPP	UK	Unitary Charge
Brentwood Community Hospital	Hospitals	HICL	UK	Unitary Charge
Brescia Hospital	Hospitals	INPP	Portugal	Unitary Charge
Brighton Hospital, UK	Hospitals	HICL	UK	Unitary Charge
Bristol BSF	education	JLIF	UK	Unitary Charge
Bristol Fishponds and Hampton House	Hospitals	INPP	UK	Unitary Charge
Bristol Shirehampton and Whitchurch	Hospitals	INPP	UK	Unitary Charge
Brockley Social Housing PFI	Gov Services	JLIF	UK	Unitary Charge
Burg Prison	Gov Services	BBGI	Germany	Unitary Charge
Calderdale	education	INPP	UK	Unitary Charge
Cambridgeshire PFI SPV 1	education	INPP	UK	Unitary Charge
Camden Housing	Gov Services	JLIF	UK	Unitary Charge
Canning Town Social Housing PFI	Gov Services	JLIF	UK	Unitary Charge
Central Middlesex Hospital, UK	Hospitals	HICL	UK	Unitary Charge
Clackmannanshire Schools	education	BBGI	UK	Unitary Charge
Cleveland Police Station and HQ	Gov Services	JLIF	UK	Unitary Charge
Connect PFI	Roads	HICL	UK	Unitary Charge
Conwy Schools, UK	education	HICL	UK	Unitary Charge
Cork School of Music	education	HICL	Ireland	Unitary Charge
Coventry Schools	education	BBGI	UK	Unitary Charge
Croydon Schools	education	HICL	UK	Unitary Charge
Darlington Schools, UK	education	HICL	UK	Unitary Charge
Defence Sixth Form College, UK	education	HICL	UK	Unitary Charge
Derby City PFI SPV 1	education	INPP	UK	Unitary Charge
Derby Courts	Gov Services	INPP	UK	Unitary Charge
Derby Schools	education	INPP, HICL	UK	Unitary Charge
Derby Schools 2	education	INPP	UK	Unitary Charge
Derbyshire PFI SPV 1	education	INPP	UK	Unitary Charge
Diabolo (T2 and T3 and T5)	Rail Link	INPP	UK	unknown
Doncaster Mental Health	Hospitals	HICL	UK	Unitary Charge
Doncaster Schools	education	HICL	UK	Unitary Charge
Dorset Fire and Rescue	Gov Services	HICL	UK	Unitary Charge
Dublin Courts	Gov Services	INPP	Ireland	Unitary Charge
Dudley Brierly Hill	Hospitals	INPP	UK	Unitary Charge
Dudley Ridge Hill and Stourbridge	Hospitals	INPP	UK	Unitary Charge
Durham and Cleveland Police Tactical Training Centre	Gov Services	HICL	UK	Unitary Charge
Durham Courts	Gov Services	INPP	Canada	Unitary Charge

Durham PFI SPV 1	education	INPP	UK	Unitary Charge
Dutch High Speed Rail Link	Roads	HICL	Netherlands	Unitary Charge
E18 Motorway	Roads	BBGI	Norway	Unitary Charge
E18 Road	Roads	JLIF	Finland	Unitary Charge
Ealing Care Homes	Hospitals	HICL	UK	Unitary Charge
Ealing Schools, UK	education	HICL	UK	Unitary Charge
East Down Colleges	education	BBGI	UK	Unitary Charge
Ecole Centrale Supelec PPP Project, France	education	HICL	France	Unitary Charge
Edinburgh Schools	education	JLIF, HICL	UK	Unitary Charge
ELLAS	Hospitals	INPP	UK	Unitary Charge
ELLAS 2	Hospitals	INPP	UK	Unitary Charge
ELLAS 3	Hospitals	INPP	UK	Unitary Charge
ELLAS 4	Hospitals	INPP	UK	Unitary Charge
Enfield Schools	education	JLIF	UK	Unitary Charge
Enfield Street Lighting	Gov Services	JLIF	UK	Unitary Charge
Essex PFI SPV 1	education	INPP	UK	Unitary Charge
Essex PFI SPV 2	education	INPP	UK	Unitary Charge
Exeter Crown Court, UK	Gov Services	HICL	UK	Unitary Charge
Falkirk NPD Schools	education	HICL	UK	Unitary Charge
Fife Schools 2 PPP	education	HICL	UK	Unitary Charge
Fife Schools, UK	education	HICL	UK	Unitary Charge
Forth Valley Royal Hospital	Hospitals	JLIF	UK	Unitary Charge
Glasgow Hospital	Hospitals	HICL	UK	Unitary Charge
Glasgow Schools	education	JLIF	UK	Unitary Charge
Gloucester Fire and Rescue, UK	Gov Services	HICL	UK	Unitary Charge
Gloucester Royal Hospital	Hospitals	BBGI	UK	Unitary Charge
Golden Ears Bridge	Roads	BBGI	Canada	Unitary Charge
Goscote	Hospitals	INPP	UK	Unitary Charge
Greater Manchester Police Authority	Gov Services	HICL, JIF	UK	Unitary Charge
Groningen Tax Office	Gov Services	JLIF	Netherlands	Unitary Charge
Harrow NRC	Hospitals	INPP	UK	Unitary Charge
Haverstock School, UK	education	HICL	UK	Unitary Charge
Health and Safety Executive (HSE) Merseyside Headquarters	Gov Services	HICL	UK	Unitary Charge
Health and Safety Laboratory, UK	education	HICL	UK	Unitary Charge
Helicopter Training Facility, UK	education	HICL	UK	Unitary Charge
Hereford and Worcester	Gov Services	INPP	UK	Unitary Charge
Highland School, Enfield	education	JLIF, HICL	UK	Unitary Charge
Home Office Headquarters, UK	Gov Services	HICL	UK	Unitary Charge
Irish Grouped Schools	education	HICL	Ireland	Unitary Charge
Islington I Housing	Gov Services	JLIF, INPP	UK	Unitary Charge
Islington II Housing	Gov Services	JLIF, INPP	UK	Unitary Charge
Kelowna and Vernon Hospitals	Hospitals	BBGI, JLIF	Canada	Unitary Charge
Kent PFI SPV 1	education	INPP, BBGI, HICL	UK	Unitary Charge
Kicking Horse Canyon	Roads	BBGI, HICL	Canada	Unitary Charge
Kingston Hospital	Hospitals	JLIF	UK	Unitary Charge
Kirklees Social Housing	Gov Services	JLIF	UK	Unitary Charge
Kromhout Barracks	Gov Services	JLIF	Netherlands	Unitary Charge
Lambeth Street Lighting	Gov Services	JLIF	UK	Unitary Charge
Lancashire PFI SPV 1	education	INPP	UK	Unitary Charge
Lancashire PFI SPV 2	education	INPP	UK	Unitary Charge
Lancashire PFI SPV 2A	education	INPP	UK	Unitary Charge
Lancashire PFI SPV 3	education	INPP	UK	Unitary Charge
Leeds Combined Secondary Schools	education	JLIF	UK	Unitary Charge
Lewisham Hospital	Hospitals	HICL	UK	Unitary Charge
Lewisham PFI SPV 1	education	INPP	UK	Unitary Charge
Lewisham PFI SPV 2	education	INPP	UK	Unitary Charge
Lewisham PFI SPV 3	education	INPP	UK	Unitary Charge
Lisburn College	education	BBGI	UK	Unitary Charge
Liverpool and Sefton Clinics	Hospitals	BBGI	UK	Unitary Charge
Liverpool Library	Gov Services	INPP	UK	Unitary Charge
Long Bay	Hospitals	INPP	Australia	Unitary Charge
LUL Connect	Roads	JLIF	UK	Unitary Charge
Luton PFI SPV 1	education	INPP	UK	Unitary Charge
M40 Motorway	Roads	JLIF	UK	Unitary Charge
M6/M74 Project	Roads	JLIF	UK	Unitary Charge
M80 DBFO	Roads	HICL, BBGI	UK	Unitary Charge
Maesteg	education	INPP	UK	Unitary Charge
Manchester School	education	HICL	UK	Unitary Charge
Manchester Street Lighting	Gov Services	JLIF	UK	Unitary Charge
Medway LIFT	Hospitals	HICL	UK	Unitary Charge
Medway Police	Gov Services	HICL	UK	Unitary Charge
Mersey Care Mental Health Hospital	Hospitals	BBGI	UK	Unitary Charge
Metropolitan Police Specialist Training Centre	Gov Services	HICL, JLIF	UK	Unitary Charge
Miles Platting Social Housing, UK	Gov Services	HICL, JLIF	UK	Unitary Charge
Ministry of Defence Main Building	Gov Services	JLIF	UK	Unitary Charge
Moray Schools	education	INPP	UK	Unitary Charge
N17/18 Road, Ireland	Roads	HICL	Ireland	Unitary Charge
Newcastle Hospital	Hospitals	JLIF	UK	Unitary Charge
Newcastle Libraries	education	HICL	UK	Unitary Charge
Newham Hospital	Hospitals	JLIF	UK	Unitary Charge
Newham Schools	education	JLIF, INPP	UK	Unitary Charge
Newport Schools	education	HICL	UK	Unitary Charge

Newton Abbot Hospital	Hospitals	HICL	UK	Unitary Charge
Norfolk	Gov Services	INPP	UK	Unitary Charge
North East Fire and Rescue	Gov Services	JLIF	UK	Unitary Charge
North Staffordshire Hospital	Hospitals	JLIF	UK	Unitary Charge
North Swindon Schools	education	JLIF	UK	Unitary Charge
North Tyneside Schools, UK	education	HICL	UK	Unitary Charge
North Wales Police Authority	Gov Services	INPP	UK	Unitary Charge
Northampton Mental Health	Hospitals	JLIF	UK	Unitary Charge
Northampton Schools	education	INPP	UK	Unitary Charge
Northeast Stoney Trail	Roads	BBGI	Canada	Unitary Charge
Northwest Anthony Henday Ring Road P3	Roads	HICL, BBGI	Canada	Unitary Charge
Northwood MoD HQ	Gov Services	HICL	UK	Unitary Charge
Norwich Area Schools PFI Project	education	HICL	UK	Unitary Charge
Nottingham PFI SPV 1	education	INPP	UK	Unitary Charge
Nottingham PFI SPV 2	education	INPP	UK	Unitary Charge
NSW Schools	education	INPP	Australia	Unitary Charge
Nuffield Hospital	Hospitals	HICL	UK	Unitary Charge
Oldham Library	education	HICL	UK	Unitary Charge
Oldham Secondary Schools PFI Project	education	HICL	UK	Unitary Charge
Orange Hospital	Hospitals	INPP	Australia	Unitary Charge
Oxford Churchill Oncology	Hospitals	HICL	UK	Unitary Charge
Oxford Dunnock Way and East Oxford	Hospitals	INPP	UK	Unitary Charge
Oxford John Radcliffe PFI Hospital	Hospitals	HICL	UK	Unitary Charge
Pembury Hospital	Hospitals	JLIF	UK	Unitary Charge
Perth and Kinross Schools	education	HICL	UK	Unitary Charge
Peterborough Hospital	Hospitals	JLIF	UK	Unitary Charge
Peterborough Schools	education	JLIF	UK	Unitary Charge
Pforzheim Schools	education	INPP	UK	Unitary Charge
Pinderfields and Pontefract Hospitals, UK	Hospitals	HICL	UK	Unitary Charge
QFTO - Barrow	Renewables	INPP	UK	unknown
QFTO - Gunfleet Sands	Renewables	INPP	UK	unknown
QFTO - Lincs	Renewables	INPP	UK	unknown
QFTO - Ormonde	Renewables	INPP	UK	unknown
QFTO -Robin Rigg	Renewables	INPP	UK	unknown
Queen Alexandra Hospital, Portsmouth, UK	Hospitals	HICL	UK	Unitary Charge
Queen Elizabeth Hospital	Hospitals	JLIF	UK	Unitary Charge
Queen's (Romford) PFI Hospital	Hospitals	HICL	UK	Unitary Charge
RD901 Road, France	Roads	HICL	France	Unitary Charge
Realise Health (LIFT) Colchester	Hospitals	JLIF	UK	Unitary Charge
Redbridge and Waltham Forest LIFT	Hospitals	HICL	UK	Unitary Charge
Redcar and Cleveland Street Lighting	Gov Services	JLIF	UK	Unitary Charge
Reliance Rail	Rail Link	INPP	Australia	unknown
Renfrewshire Schools, UK	education	HICL	UK	Unitary Charge
Rhondda Cynon Taf Schools	education	HICL	UK	Unitary Charge
Roseberry Park Hospital	Hospitals	JLIF	UK	Unitary Charge
Royal Children's Hospital	Hospitals	INPP	Australia	Unitary Charge
Royal School of Military Engineering PPP Project, UK	Gov Services	HICL	UK	Unitary Charge
Royal Women's Hospital	Hospitals	BBGI	Australia	Unitary Charge
Salford and Wigan BSF Phase 1	education	HICL, INPP	UK	Unitary Charge
Salford and Wigan BSF Phase 2	education	HICL, INPP	UK	Unitary Charge
Salford Hospital, UK	Hospitals	HICL	UK	Unitary Charge
Scottish Borders Schools	education	BBGI	UK	Unitary Charge
Sheffield BSF, UK	education	HICL	UK	Unitary Charge
Sheffield Hospital, UK	Hospitals	HICL	UK	Unitary Charge
Sheffield Schools	education	HICL	UK	Unitary Charge
Showgrounds	Gov Services	INPP	Australia	Unitary Charge
Sirhowy Way	Roads	JLIF	UK	Unitary Charge
Somerset PFI SPV 1	education	INPP	UK	Unitary Charge
South Ayrshire Schools, UK	education	HICL	UK	Unitary Charge
South Bristol Community Hospital	Hospitals	INPP	UK	Unitary Charge
South East London Police stations	Gov Services	HICL, JLIF	UK	Unitary Charge
South Lanarkshire Schools	education	JLIF	UK	Unitary Charge
South West Hospital, Enniskillen	Hospitals	HICL	UK	Unitary Charge
Southwark PFI SPV 1	education	INPP	UK	Unitary Charge
Southwark PFI SPV 2	education	INPP	UK	Unitary Charge
St Thomas More School	education	INPP	UK	Unitary Charge
Staffordshire LIFT	Hospitals	HICL	UK	Unitary Charge
STaG PFI SPV 1	education	INPP	UK	Unitary Charge
STaG PFI SPV 2	education	INPP	UK	Unitary Charge
Stoke Mandeville Hospital, UK	Hospitals	HICL	UK	Unitary Charge
Stoke on Trent and Staffordshire Fire and Rescue Service	Gov Services	BBGI	UK	Unitary Charge
Strathclyde	Gov Services	INPP	UK	Unitary Charge
Surrey Street Lighting	Gov Services	JLIF	UK	Unitary Charge
Sussex Custodial Services, UK	Gov Services	HICL	UK	Unitary Charge
Tameside General Hospital	Hospitals	HICL	UK	Unitary Charge
Tameside PFI SPV 1	education	INPP	UK	Unitary Charge
Tameside PFI SPV 2	education	INPP	UK	Unitary Charge
Tor Bank School	education	BBGI	UK	Unitary Charge
Tower Hamlets Schools	education	INPP	UK	Unitary Charge
Tyne and Wear Fire Stations	Gov Services	HICL	UK	Unitary Charge
University of Bourgogne, France	education	HICL	UK	Unitary Charge
University of Sheffield Project, UK	Education	HICL	UK	Unitary Charge

Unna Administrative Centre	Gov Services	BBGI	Germany	Unitary Charge
Vancouver General Hospital	Hospitals	JLJF	Canada	Unitary Charge
Victoria Prisons	Gov Services	BBGI	Australia	Unitary Charge
Wakefield Street Lighting	Gov Services	JLJF	UK	Unitary Charge
Walsall Street Lighting	Gov Services	JLJF	UK	Unitary Charge
Waltham Forest PFI SPV 1	education	INPP	UK	Unitary Charge
West Lothian Schools	education	HICL	UK	Unitary Charge
West Middlesex Hospital, UK	Hospitals	HICL	UK	Unitary Charge
Willesden Hospital	Hospitals	HICL	UK	Unitary Charge
Wolverhampton PFI SPV 1	education	INPP	UK	Unitary Charge
Wolverhampton and Walsall	Hospitals	INPP	UK	Unitary Charge
Wolverhampton PFI SPV 2	education	INPP	UK	Unitary Charge
Women's College Hospital	Hospitals	BBGI	Canada	Unitary Charge
Wooldale Centre for Learning, UK	education	HICL	UK	Unitary Charge
Zaanstad Penitentiary Institution, The Netherlands	Gov Services	HICL	Netherlands	Unitary Charge

source: annual reports

Table 15: List of underlying investments made by the GCP in the PFI portfolio

Vehicle name	Sector	Country	Revenue Source
Cardale Infrastructure Investments LTD	Various PFI	UK	Unitary Charge
Civic PFI Investments II Ltd	Gov Services	UK	Unitary Charge
Civic PFI Investments Ltd	Various PFI	UK	Unitary Charge
Civic PFI Investments Ltd Notes due 2037	Gov Services	UK	Unitary Charge
Education PFI Investments Ltd	education	UK	Unitary Charge
FHW Dalmore (Salford Pendleton Housing plc)	Gov Services	UK	Unitary Charge
GCP Asset Finance 1 Ltd	education	UK	Unitary Charge
GCP Biomass 1 C Ltd	Renewables	UK	ROCs*
GCP Biomass 1 Ltd	Renewables	UK	ROCs*
GCP Biomass 2 Ltd	Renewables	UK	ROCs*
GCP Biomass 3 Ltd	Renewables	UK	RHI
GCP Biomass 4 Ltd	Renewables	UK	ROCs*
GCP Commercial Solar 1 Ltd	Renewables	UK	Feed-in-Tariff
GCP Education 1 Ltd	education	UK	Unitary Charge
GCP Green Energy 1 Ltd	Renewables	UK	ROCs*, Feed-in-Tariff
GCP Healthcare 1 A Ltd	Hospitals	UK	Unitary Charge, ROCs*
GCP Healthcare 1 D Ltd	education	UK	Unitary Charge
GCP Healthcare 1 E Ltd	Hospitals	UK	Unitary Charge
GCP Healthcare 1 Ltd	Hospitals	UK	Unitary Charge
GCP Hydro 1 A Ltd	Renewables	UK	Feed-in-Tariff
GCP Hydro 1 B Ltd	Renewables	UK	Feed-in-Tariff
GCP Hydro 1 C Ltd	Renewables	UK	Feed-in-Tariff
GCP Onshore Wind 1 A Ltd	Renewables	UK	ROCs*
GCP Onshore Wind 1 B Ltd	Renewables	UK	ROCs*
GCP Onshore Wind 1 C Ltd	Renewables	UK	ROCs*
GCP Onshore Wind 1 D Ltd	Renewables	UK	ROCs*
GCP Onshore Wind 2 Ltd	Renewables	UK	Feed-in-Tariff
GCP Onshore Wind 3 Ltd	Renewables	UK	ROCs*
GCP RHI Boiler 1 Ltd	Renewables	UK	RHI
GCP Rooftop Solar 1 Ltd	Renewables	UK	Feed-in-Tariff
GCP Rooftop Solar 2 Ltd	Renewables	UK	Feed-in-Tariff
GCP Rooftop Solar 3 B Ltd	Renewables	UK	Feed-in-Tariff
GCP Rooftop Solar 3 Ltd	Renewables	UK	Feed-in-Tariff
GCP Rooftop Solar 4 B Ltd	Renewables	UK	Feed-in-Tariff
GCP Rooftop Solar 4 Ltd	Renewables	UK	Feed-in-Tariff
GCP Rooftop Solar 5 Ltd	Renewables	UK	Feed-in-Tariff
GCP Rooftop Solar 6 Ltd	Renewables	UK	Feed-in-Tariff
GCP Social Housing 1 Ltd	Gov Services	UK	Unitary Charge
GEM Infrastructure - T26	Various PFI	UK	Unitary Charge
GEM Infrastructure - T29	Various PFI	UK	Unitary Charge
Grosvenor PFI Holdings Ltd	Various PFI	UK	Unitary Charge
Kirklees PFI Ltd	education	UK	Unitary Charge
Leisure Infrastructure Investors Ltd	Various PFI	UK	Unitary Charge

\*ROCs: renewable obligation certificates, source: annual reports

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