MINICASE BUILDING THE EUROTUNNEL

The Eurotunnel Project took 10 years to complete. It involved the construction of a twin-bore rail tunnel with associated infrastructure, rolling stock ("railroad cars"), and terminals. It joined the United Kingdom's rail system with those of France and the rest of continental Europe. It provides comfortable, fast, frequent, and reliable rail service that is competitive with air travel between London and Paris.

The project was technically straightforward from an engineering standpoint. It was initially expected to cost £4.8 billion (£ stands for British pounds). The cost estimate was later increased to £6.0 billion. This construction cost was spread more or less evenly over eight years. The sponsors raised £1.0 billion of equity and £5.0 billion of debt. Most of the debt was floating rate (the rate is reset regularly to current market rates).

In return for building the project, the sponsors received authority to operate it for 48 years. They would receive all the revenues and pay all the costs. At the end, the governments of Great Britain and France would become the owners without any further compensation to the project sponsors.

This table provides project projections. For years not listed, assume each item increases by equal annual amounts between the years given. The tax rate is 40%. Using an 8% cost of capital and assuming the £6 billion construction cost is spread evenly over the eight years of construction, calculate the project's NPV and IRR.

CASH FLOW PROJECTIONS FOR THE EUROTUNNEL PROJECT (MILLIONS OF BRITISH POUNDS)

YEAR	1	2	3	4	5	6	7	8	9	10	20	30	40	48
Revenue:														
Shuttle	£384	£423	£463	£505	£551	£599	£652	£709	£770	£836	£1,763	£3,527	£6,682	£10,650
Rail	314	341	368	396	430	459	493	530	569	612	1,191	2,105	3,641	5,526
Ancillary	64	71	77	85	91	100	109	117	127	138	282	552	1,033	1,648
Total Revenue	762	835	908	986	1,072	1,158	1,254	1,356	1,466	1,586	3,236	6,184	11,356	17,824
Operating Costs:														
Fixed expenses	88	92	99	107	117	126	137	148	161	174	314	562	1,006	1,604
Variable expenses	57	63	69	76	89	90	98	107	116	130	317	645	1,240	2,000
Total Operating Costs	145	155	168	183	206	216	235	255	277	304	631	1,207	2,246	3,604
Depreciation	158	159	160	162	167	169	171	173	176	184	234	271	328	383
Interest, net	351	322	307	291	277	265	234	212	190	171	39	173	370	616
Profit before taxes	108	199	273	350	422	508	614	716	823	927	2,410	4,879	9,152	14,453
Income taxes	18	38	53	69	88	198	240	279	321	361	934	1,893	3,547	5,573
Profit after taxes	£90	£161	£220	£281	£334	£310	£374	£437	£502	£566	£1,476	£2,986	£5,605	£8,880