LNG Project Valuation with Financial Leasing Contracts *

By

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Abstract

Financial leasing is prevalent in LNG projects. Actually, in many LNG infrastructure projects, leasing is the only option for oil companies. A common approach in such settings is to treat financial leasing costs as operating cost and discount with the firm's weighted average cost of capital (WACC). This method, which is applied on huge investments in LNG infrastructure, overstates project profitability and may lead to overinvestment. Since financial leasing payments are contractual and deterministic, a separate cash flow valuation is called for, with a lower discount rate for financial leasing costs. We present a correct method for calculating the net present value of projects when there are no investment alternatives, i.e., when leasing is the only option. Finally, we demonstrate through a real LNG project example, the magnitude in the project net present value error with the current valuation method.

Keywords: Project Valuation, Capital Budgeting, Financial leasing, Financial cost.
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1. Introduction

The textbook method for the lease or buy decision is to estimate the expected cost cash flow after tax for the two cost alternatives and calculate the present value of these using the after-tax borrowing rate in discounting. The lowest cost option is the preferred choice. However, in some cases there is no investment alternative for the financial asset to be leased. These are situations where there are only offers for leasing an asset, there is no available development time for investing in the asset, or management does not consider owning this type of asset.

In such cases the textbook method may not be used since there is no investment option. Consequently the calculation of the net present value of the project for a decision (and comparison to other projects) must include the leasing contract. This inclusion of the financial leasing cost must be undertaken correctly in order to estimate a correct project net present value. To allocate investment funds optimal within petroleum companies, it is necessary to apply consistent valuation methods.

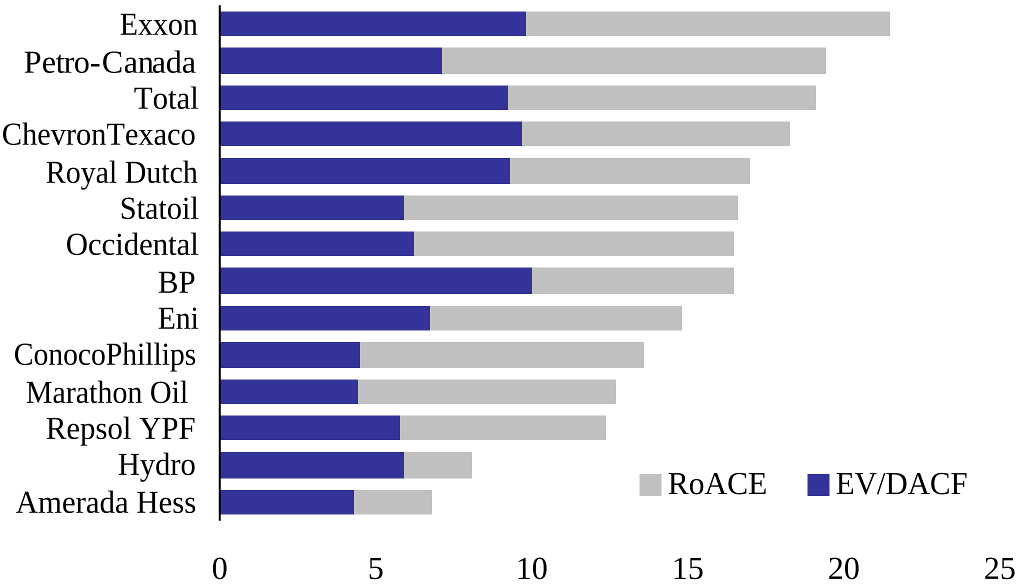
We find the common practice of treating leasing payments as operating costs and applying the WACC does not reflect the actual risk structure, as leasing payments often are fixed by contracts for up to twenty years. The current practice, which applies to huge investments in LNG infrastructure, overrates profitability. It may thus lead to overinvestment. Also, there is a potential problem of sub-optimisation in the companies' internal capital allocation process. Project managers that would like to achieve support for their project, may have an incentive to opt for leasing, as this would give an undue increase in NPV with the current evaluation methods. Thus, there may be distortions in the decision to buy or lease, in the overall investment decision, and in the internal allocation of investment funds. Most critical this would be in a critical bidding situation where wrongful valuation could induce too aggressive bidding. A real world example of such distortions is provided in Section 8.

2. Introduction to Liquefied Natural Gas projects and leasing

The liquefied natural gas (LNG) technology is able to utilise marine transportation, and LNG is like oil slowly becoming an internationally traded commodity. The LNG project chain consists of four links (occasionally five); 1) field development, in some cases 2) a pipeline to the coast, 3) the liquefaction facility, 4) tanker transportation, and 5) the receipt/regasification terminal.[1] Each element is highly capital intensive and front-end loaded. Field development will in many cases only represent a quarter of the overall capital expenditure.

Financial leasing is prevalent in links 2) to 5). There are several reasons why the international oil companies choose leasing. There has been a trend towards a narrowing of the strategic core. Oil companies engage in exploration, development and distribution of petroleum, and make active use of outsourcing in situations where there exist a functioning marked for services. Leasing may also be beneficial if the infrastructure lasts longer than the estimated production time of the reservoir. Another motive for financial leasing is to reduce the capital employed, to improve return on average capital employed (RoACE). Investment banks benchmark international oil companies according to their RoACE, and use this indicator for valuation. For a given year, UBS Warburg identifies a clear relationship between RoACE and the EV/DACF multiple, and conclude:

Figure 1: RoACE and EV/DACF for Major International Oil Companies 2003



Data source: Deutsche Bank: Major Oils 2004.

"Each of the stocks which we rate a 'Buy' is trading below the average level relative to its returns. EV/DACF versus RoACE provides the key *objective* input into the process of setting our target prices." [2]

Similar statements about valuation, multiples and return on capital are made in Deutsche Bank's publication *Major Oils*. For more details on valuation of oil projects and companies, see Osmundsen et. al (2006, 2007) and Emhjellen and Alaouze (2002a, 2002b).

If financial leasing were adequately adjusted for in financial valuation analyses, leasing decisions would not have any impact. It is unclear, however, if external analysts – who are tracking many companies - have the necessary information and resources to do such adjustments in a consistent manner. In the numbers behind Figure 1, such adjustments have not been made. If most companies follow a strategy of leasing, thus reducing capital employed and boosting RoACE, a deviation from this strategy by one company would harm its performance on the RoACE benchmarking.

LNG leasing arrangements often involve long term contracts with fixed payments from companies that are financially robust. Thus, one could from a separate cash flow perspective argue that the oil companies themselves could own the infrastructure, which would be the optimal solution if appropriate risk adjustments were made to this partial cash

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[1] See Jensen (2004).

flow. But if investors expect high RoACE - and implicitly a higher risk profile from oil companies (clientele effect) - it might be optimal to leave this job to specialised companies having different owners and a different return profile (lower return, lower risk). The LNG investment analyses of the oil companies' should in these cases reflect the fact that the leasing payments on dedicated infrastructure represent fixed payments for some 20 years.

3. Existing literature

In reviewing the existing literature on leasing and project valuation we have found no work on project valuation where an investment alternative to the financial lease contract does not exist. Early work by Lewellen *et al* (1976), Brealey and Young (1980) and Ang and Peterson (1984) focus on incentives for leasing and whether debt and leasing is complements or substitutes. Recent work in this area has been provided by Sharpe and Nguyen (1995), Kang and Long (2001) and Ezzell and Vora (2001).

Sharpe and Nguyen (1995) argue that firms facing high costs of external funds can economize on the cost of funding by leasing. Kang and Long (2001) find that leasing and debt financing is substitutes and that tax position, agency cost, bankruptcy cost and asymmetric information are significant factors in predicting leasing levels. They also find results consistent with Sharpe and Nguyen (1995) that higher levels of leasing is more likely in less profitable, risky firms with lower levels of fixed assets. Ezzell and Vora, 2001 find support for increase in lessee equity value for the tax savings hypothesis and the savings in bankruptcy costs hypothesis of sale and leasebacks but less so for direct leases.

Other research focus on the yield/return of lease contracts (Grenadier, 1996 and Schallheim *et al*, 1987) and the valuation of the lease contract itself (Trigeorgis, 1996 and McConnell and Schallheim, 1983).

Grenadier (1996) presents a model for the estimation of equilibrium credit spread on leases subject to default risk. Schallheim et al (1987) examine a representative sample of

[2] *Global Integrated Oil Analyzer*.

financial leases and find some evidence of a relationship between lease yields and the default risk of the lessee. In addition, they find the yield to be related to treasury bond yields, their proxy for the systematic risk of the leased assets residual value and the transaction and information cost associated with the lease.

Trigeorgis (1996) and McConnell and Schallheim (1983) work on the valuation of leasing contracts when different option values are present. With option values present in the contract there are added benefits to the lessee or leaser. The lease contract is no longer a strict financial lease since there are other benefits to the contract than financing only.

We complement the existing literature in the present paper by focusing on the challenges in applied valuation in situations where leasing is the only option.

4. Investment decisions with financial leasing

In this paper we present a method for calculating the net present value of a project with a financial lease contract when there is no investment alternative to leasing and the lease is a strict financial lease. There are no options in the lease contract and leasing is assumed to be a perfect substitute for debt.

Treating the financial lease as an operating cost will provide an erroneous estimate of the net present value (NPV) of the project. An alternative method for estimating a project net present value is suggested: calculating an investment equivalent from the financial lease contract and replacing the investment equivalent for the financial lease payments in the project cash flow.

The rest of the paper is organized as follows. In section 5 we demonstrate the textbook method of the lease and buy decision. In section 6 we present the difference between total capital and equity capital and the mistake of treating the financial lease as an operating cost.

Section 7 presents the method for calculating project net present values with financial leasing contracts and section 8 provides a practical LNG project example. We conclude in section 9.

5. The Textbook Approach

The textbook method for the lease or buy decision involves estimating the expected difference cash flow after-tax between leasing and buying, and discounting it using the after-tax borrowing rate of the firm (Brealey and Myers, 2003 pp. 737-743). Thus, the present value of the cost of the leasing alternative and the invest alternative is compared using the after-tax debt financing cost of the firm. The lowest cost option is then the preferred alternative. The method assumes that the lease or buy decision is a strict finance decision. Most firms treat leasing using the textbook method (Mukherjee, 1991).

When deciding to lease an asset rather than owning it one looses the right to the depreciation amounts and gains the right to deduct the down payments from the loan. The net present value of leasing for the lessee is (Copeland and Weston, 1992, 623)

$$NPV = I - \sum_{t=1}^{T} \frac{L_t(1-T_c) + D_t T_c}{\left[1+(1-T_c)r_d\right]^t}, \quad (1)$$

where I is the investment, L_t is the lease payments, D_t is the depreciation amounts, T_c is the corporate tax rate and r_d is the corporate borrowing rate.

For illustration, a simple numeric example is presented. An oil firm is evaluating a new oil lease development and are faced with the option of leasing a production vessel for 6 years at a cost of 120 million USD per year or investing in the production vessel at a cost of 600 million USD. The corporate tax is 28%, and investments in the vessel may be tax depreciated linearly over 6 years. The corporate borrowing rate is 7%, which implies an after-tax borrowing rate of 5,04% [7% x (1-0,28)]. The net present value of the financial lease for the lessee - the NPV of the differential cash flow - is then

$$NPV = 600 - \sum_{t=1}^{6} \frac{120(1-0.28) + 100(0.28)}{\left[1 + (1-0.28)0,07\right]^t} = 20.1 \qquad . \qquad (2)$$

Since the NPV is positive the present value of the after-tax financial lease cost is lower than the after-tax investment cost and the decision is to lease the production vessel. However, before this decision can be made the value of the project when investing must be estimated. The value of the project when investing is

$$NPV = -I + \sum_{t=1}^{T} \frac{(R_t - O_t)(1-T_c) + D_t T_c}{\left[1 + WACC\right]^t} \qquad , \qquad (3)$$

where R_t is revenue, O_t is operating cost and WACC is the weighted average cost of capital. Assuming a WACC of 10% and project revenues and operating costs of 200 million and 50 million per year, respectively, the value of the project is

$$NPV = -600 + \sum_{t=1}^{6} \frac{(200-50)(1-0.28) + 100(0.28)}{\left[1,1\right]^t} = -7.7 \qquad . \qquad (4)$$

Based on investing with the normal cost of financing reflected in the WACC the project should be rejected. However, with the cheaper than normal financing provided by the financial leasing offer the project NPV is positive and the project should be accepted (-7.7+20.1=12.4).[3]

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[3] The exemple presumes no alternative use of the lease contract.

The application of the "textbook" approach requires that there exist an investment alternative for the financial lease object in question and that the investment cost is known. In many practical situations this is not the case. There are situations where there are only offers for leasing the asset or there is no development time for an investment alternative in order for the project to be realised. In other cases management does not consider owning this type of asset and the true cost of investing is not known. In such cases the calculation of the net present value of the project must incorporate the cost of the financial lease before an acceptance or rejection of the project.

6. Total capital, equity capital and debt capital

WACC consists of the cost of equity obtained from the capital asset pricing model (CAPM) (Sharpe, 1964) and the cost of debt, and is a weighted average of the two based on the firm's capital structure. WACC is therefore applicable only in discounting the total capital cash flow.

In table I the total capital cash flow, debt capital cash flow and equity capital cash flow is presented.

Table I: Total Capital-, Debt Capital- and Equity Capital cash flow

Total capital cash flow	Debt capital cash flow	Equity capital cash flow
+Revenues		+Revenues
-Investment		-Investment
-Operating cost		-Operating cost
-Tax payments		-Tax payments
	-Loan	+Loan
	+Interest	-Interest
	+Down payments	-Down payments

Financial lease payments are for all practical purposes equivalent with a debt cash flow. From the table is clear that introducing leasing in the total capital cash flow will change it to an equity capital cash flow. The two cash flows have different systematic risk because the inclusion of debt in the equity cash flow amplifies the equity cash flow risk (Copeland and Weston, 1992, pp. 458-459). The WACC may therefore not be used in calculating project value when the financial lease cost is included in the cash flow stream as an operating cost (i.e. in effect increasing leverage). In addition, including the financial lease in the project cash flow will cause the debt level to change during the life of the project. The use of the WACC in discounting project cash flow requires a constant debt ratio (Miles and Ezzell, 1980). Different debt levels during the life of the project are not consistent with a constant WACC. Consequently, a project NPV estimate using WACC is incorrect.

Our example will exemplify the project valuation error of treating the financial lease as an operating cost. In equation (5) the financial lease payments are included as operating cost in the project cash flow stream.

$$NPV = \sum_{t=1}^{T} \frac{(R_t - O_t - L_t)(1 - T_c)}{\left[1 + (1 - T_c) r_d\right]^t} \quad . \qquad (5)$$

Using equation (5), the net present value of the example in Section 5 is calculated to 94.1 million USD.

$$NPV = \sum_{t=1}^{6} \frac{(200 - 50 - 120)(1 - 0.28)}{\left[1{,}1\right]^t} = 94.1 \quad . \qquad (6)$$

The financial leasing cost payments (120 per year) are included in the cash flow as an "operating cost". Interest and down payments enter the cash flow and are deducted as operating cost. The "net present value" of 94.1 million USD is a substantial increase from the 12.4 million calculated from equation (2) and (4). The calculation is erroneous since the cash flow is no longer a total capital cash flow where the WACC may be used in discounting.

7. The Method - Calculating project NPV with a financial lease

The method requires calculating an investment equivalent from the lease payments. This investment equivalent is an estimate of the present value of the financial commitment the lease represents. The investment equivalent (*E*) is calculated by estimating the present value of the lease payments using the corporate borrowing rate. Since this is a strict financial lease where borrowing and leasing are perfect substitutes, the corporate borrowing rate before tax is used in discounting. In equation 7 *E* is calculated

$$E = \sum_{t=1}^{T} \frac{L_t}{(1+r_d)^t}, \tag{7}$$

where L_t is the lease payments and r_d is the corporate borrowing rate before tax.

The lease payment is an annuity with present value *E* and interest and down payments of i_t and d_t, respectively. The tax shield resulting from i_t is accounted for in the WACC. The down payments, d_t, are the estimates of the depreciation amounts of the investment equivalent *E*. The value equation is then

$$NPV = -E + \sum_{t=1}^{T} \frac{(R_t - O_t)(1-T_c) + d_t T_c}{\left[1+WACC\right]^t}, \tag{8}$$

where E has replaced I and d_tT_c has replaced D_tT_c in equation (3). The example case value of the project is then

$$NPV = -572 + \sum_{t=1}^{6} \frac{(200-50)(1-0.28)+0.28d_t}{[1,1]^t} = 12.5 \ . \qquad (9)$$

With leasing payments of 120 million and a borrowing rate of 7%, E is calculated to 572, and the down payments (d_t) as estimate of the depreciation amounts associated with E are calculated to [80.0, 85.6, 91.5, 98.0, 104.8, 112.1] from years 1 through 6 respectively (annuity from lease). The estimated NPV of the project using the investment equivalent method is 12.5 million USD. This project NPV estimate is a better estimate of the project net present value than the erroneous project NPV of 94.1 million USD calculated in equation (6).

In Appendix 1 we provide a test of our proposed invest equivalent method, indicating that it is an accurate method.

8. Case: Liquefied Natural Gas example

To illustrate the magnitude in the net present value calculation error an example from an offshore Liquefied Natural Gas (LNG) field development is presented. Detailed project data are available in Appendix 2. The building of the necessary LNG trains and field capital expenditure (wells and modification) amount to 7.6 billion 2006 USD. The project has an upfront committed contractual agreement with the ship owner and the regasification terminal (at the east cost of the USA) owner for the whole production period (2014-2039). The contractual agreement is a take or pay agreement that commits the oil company to pay the tariff whether they use the facilities or not. We do not have access to reliable information on investment cost for LNG transportation ships or a regasification terminal.

The shipping and regasification costs (paid in terms of tariffs) are 1 USD per mill Btu. Ordinary operating costs are 5,5 billion USD over the lifespan of the project. Investment start is set to 2010 and production is in the period from 2014 to 2039. Total production amounts to 100 billion standard cubic meter of Gas and 14 million standard cubic meter of condensate.

Price assumptions are an eastern USA Gas price of 6,25 USD (2006) per million Btu and an oil price of 38 USD (2006) per barrel. The required rate of return is 10% after tax (real), inflation is 2.5%, and the reference year for discounting is 2006. The Norwegian offshore tax regime with a 78% marginal tax rate is assumed and the investment in shipping and regasification is assumed to be in a tax regime with a 28% marginal tax rate (ordinary tax rate in onshore Norway). The shipping and regasification cost, however, is assumed to be deductible against the 78% tax rate regime by the oil companies.

The shipping and regasification cost of 1 USD per mill Btu will amount to 3,8 billion USD over the lifespan of the project. In a standard net present value calculation where the shipping and regasification cost erroneously classified as operating cost, the project net present value is 359 million USD. If we calculated the net present value of the project in accordance with the investment equivalent method presented in this article, however, the net present value is negative; minus 73 million USD.

Table II. NPV, LNG example — Mill 2006USD

	NPV before tax	NPV after tax
Lease treated as operating cost	892	359
Lease treated as investment	538	-73

This demonstrates the magnitude of the error in net present value calculation and the possibility of a wrong project acceptance decision. Management must be aware of this possible net present value calculation error and treat leasing arrangements correctly in the valuation of the project. If capital leasing is not treated correctly in the project net present value calculation, other investment cost (7.6 billion USD in this example) could make project managers eager to lease additional assets, thereby reducing the investment amount and increasing the extent of leasing. This could give rise to even larger errors.

9. Conclusion

An important objective for capital investment valuation procedures in a company is to establish a level playing field for the capital allocation process, to facilitate an optimal allocation of investment funds. A common way to achieve this end is to take financing decisions out of the projects' NPV calculations. This is sometimes challenged by inseparable project financing, e.g., financial leasing of LNG infrastructure. Financial leasing represents fixed payments, analogously to debt financing. Thus, project leasing increases the company's gearing and thereby increases the funding cost of all the company's projects. This negative external effect is not accounted for in the traditional way of treating financial leasing. Accordingly, the profitability of such projects is overrated, and there are too strong incentives to take on project financing. In the paper we have presented a method that accounts for the distortions that may be imposed by leasing in investment projects.

The textbook method for the lease or buy decision is to compare the after tax investment cost with the after tax cost of leasing using the after tax borrowing rate. In many LNG-projects, however, leasing is the only option. A common approach in such settings is to treat financial leasing costs as operating cost and discount with the firm's weighted average cost of capital (WACC). This method, which is applied on huge investments in LNG infrastructure, overstates project profitability and may cause overinvestment. Since financial leasing payments are contractual and deterministic, a separate cash flow valuation is called for, with a lower discount rate for financial leasing costs. We demonstrate that by including leasing payments in the total capital cash flow, it changes to an equity capital cash flow. WACC is thus not applicable.

We present a method for calculating project values with financial lease contracts when there are no investment alternatives to leasing. The method uses the cash flow from the financial lease contract offer in obtaining an estimate for an investment equivalent to replace the financial lease cost in the project cash flow. The firm weighted average cost of capital is then applicable in discounting the project cash flow. The method developed provides better estimates of project values since the alternative approach makes the error of treating the financial lease costs as operating costs. The example of an LNG project calculation demonstrates that the error in the project net present value calculation may be substantial, and that erroneous investment decisions may be made.

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Appendix 1: Test of the accuracy of the proposed investment equivalent method

In Section 7, we demonstrated a considerable deviation in project value between the common method of treating leasing costs as OPEX, and our proposed investment equivalent method. We now test the accuracy of our method by comparing with the textbook method. As pointed out, the textbook method is not applicable when the investment amount is not known to the lessee. For testing our method, however, we check the accuracy of our method in a case where the investment cost is known to the lessee.

From equation (1), (3), (7) and (8) the project value difference, which we denote PV_D, between the textbook method and the investment equivalent method, is given by

$$PV_D = -I + \sum_{t=1}^{T} \frac{(R_t - O_t)(1-T_c) + D_t T_c}{\left[1+WACC\right]^t} + I - \sum_{t=1}^{T} \frac{L_t(1-T_c) + D_t T_c}{\left[1+(1-T_c)r_d\right]^t}$$
$$+ \sum_{t=1}^{T} \frac{L_t}{(1+r_d)^t} - \sum_{t=1}^{T} \frac{(R_t - O_t)(1-T_c) + d_t T_c}{(1+WACC)^t} \qquad (10)$$

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Simplifying the expression, we get

$$PV_D = +\sum_{t=1}^{T} \frac{L_t}{(1+r_d)^t} + \sum_{t=1}^{T} \frac{(D_t - d_t)T_c}{(1+WACC)^t} - \sum_{t=1}^{T} \frac{L_t(1-T_c) + D_t T_c}{\left[1+(1-T_c)r_d\right]^t} \qquad (11)$$

For our example with T equal to 6 periods,

$$PV_D = +\sum_{t=1}^{6} \frac{120}{(1.07)^t} + \sum_{t=1}^{6} \frac{(100-d_t)0.28}{(1.1)^t} - \sum_{t=1}^{6} \frac{120(1-0.28)+100(0.28)}{(1.0504)^t} = -0.1 \quad . \qquad (12)$$

The difference – the textbook method less investment equivalent method - is merely given by -0.1, i.e., indicating accuracy of the proposed investment equivalent method.

When deciding to lease an asset rather than owning it one looses the right to the depreciation amounts and gains the right to deduct the down payments from the loan. The difference in equation (11) is caused by the fact that the tax gain from this difference is discounted differently with the two methods. In the textbook method the difference is discounted using the after tax borrowing rate while in the suggested investment equivalent method the difference is discounted using the WACC. Equation (13), as equation (11), therefore expresses the net present value difference between the two methods

$$PV_D = -\sum_{t=1}^{T} \frac{(D_t - d_t)T_c}{(1 + r_d(1 - T_c))^t} + \sum_{t=1}^{T} \frac{(D_t - d_t)T_c}{(1 + WACC)^t} \quad . \tag{13}$$

Using (13) for our example the present value difference is -0.1 million USD which is equal to the difference shown in (12).

Setting (11) equal to (13), we get

$$\sum_{t=1}^{T} \frac{L_t}{(1 + r_d)^t} = \sum_{t=1}^{T} \frac{L_t(1 - T_c) + D_t T_c}{\left[1 + (1 - T_c) r_d\right]^t} - \sum_{t=1}^{T} \frac{(D_t - d_t)T_c}{(1 + (1 - Tc) r_d)^t} \quad . \tag{14}$$

Since the lease payment (L_t) is equal to the down payment (d_t) plus the interest payment (i_t), (14) is equal to

$$\sum_{t=1}^{T} \frac{L_t}{(1 + r_d)^t} = \sum_{t=1}^{T} \frac{i_t(1 - T_c) + d_t}{\left[1 + (1 - T_c) r_d\right]^t} \quad . \tag{15}$$

Equation (15) demonstrates that the present value of a loan is equal to the present value of the interest payments after-tax plus the present value of the down payments, both discounted using the after-tax interest rate.

For any given t since $i = \frac{Lr_d}{(1+r_d)}$ and $d = L - \frac{Lr_d}{(1+r_d)}$

$$\frac{L}{(1+r_d)} = \frac{L/(1+r_d)r_d(1-T_c) + L - L/(1+r_d)r_d}{\left[1+(1-T_c)r_d\right]} \tag{16}$$

and

$$\frac{L}{(1+r_d)} = \frac{L(1+r_d - T_c r_d)}{(1+r_d - T_c r_d)(1+r_d)} = \frac{L}{(1+r_d)} \quad . \tag{17}$$

In the case where there is no investment alternative, there exist no alternative but to use the corporate WACC in discounting the depreciation tax shields. Differences in cash flows between alternative development concepts are in practical analysis evaluated by using the WACC. The suggested investment equivalent method is, as a result of using the WACC when discounting the depreciation tax shields, consistent with current practice.

An alternative method to the investment equivalent method is to estimate a correct required rate of return for the project cash flow including the financial lease (i.e. an equity cash flow). Such a project valuation method would be difficult and not very practical since the financial lease will cause the debt level to change during the lifetime of the project, requiring a new estimate for the required rate of return for each individual period.

Appendix 2: Data from the LNG example

Table 1: Lease treated as operating cost Mill USD

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Income	0	0	0	0	449	1742	1906	2008	2062	2157
Capital expenditure	355	1224	1551	2013	1378	186	121	62	33	201
Operating cost	2	16	39	64	112	225	217	221	246	230
Lease	0	0	0	0	58	216	216	217	216	218
Tax	-54	-295	-722	-1225	-1383	-699	237	822	1125	1213
Cash flow before tax	-358	-1241	-1590	-2077	-1099	1116	1352	1508	1567	1509
Cash flow after tax	-304	-946	-868	-852	284	1815	1115	686	442	295
	2020	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
Income	2201	2267	2335	2373	2466	2529	2653	2633	2214	1953
Capital expenditure	915	858	325	20	78	72	0	0	0	0
Operating cost	239	273	254	263	298	280	283	314	275	268
Lease	216	218	217	215	216	217	219	213	175	149
Tax	1134	912	815	959	1230	1449	1583	1631	1502	1292
Cash flow before tax	831	918	1540	1874	1875	1961	2152	2106	1765	1536
Cash flow after tax	-303	6	725	915	644	512	569	475	263	244
	2030	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**
Income	1455	716	675	822	1260	1277	790	557	325	215
Capital expenditure	0	0	0	0	0	0	0	0	0	0
Operating cost	282	223	216	258	210	66	46	36	28	93
Lease	107	48	45	54	84	84	51	36	21	12
Tax	1021	595	341	367	582	823	716	467	304	138
Cash flow before tax	1066	445	414	510	967	1127	693	486	276	110
Cash flow after tax	46	-151	73	143	384	304	-23	19	-28	-28

Table 2: Lease treated as investment

Norwegian offshore taxation case as table 1 Mill USD

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Income	0	0	0	0	449	1742	1906	2008	2062	2157
Capital expenditure	355	1224	1551	2013	1378	186	121	62	33	201
Operating cost	2	16	39	64	112	225	217	221	246	230
Lease	0	0	0	0	58	216	216	217	216	218
Tax	-54	-295	-722	-1225	-1383	-699	237	822	1125	1213
Cash flow before tax	-358	-1241	-1590	-2077	-1099	1116	1352	1508	1567	1509
Cash flow after tax	-304	-946	-868	-852	284	1815	1115	686	442	295
	2020	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
Income	2201	2267	2335	2373	2466	2529	2653	2633	2214	1953

Capital expenditure	915	858	325	20	78	72	0	0	0	0
Operating cost	239	273	254	263	298	280	283	314	275	268
Lease	216	218	217	215	216	217	219	213	175	149
Tax	1134	912	815	959	1230	1449	1583	1631	1502	1292
Cash flow before tax	831	918	1540	1874	1875	1961	2152	2106	1765	1536
Cash flow after tax	-303	6	725	915	644	512	569	475	263	244
	2030	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**
Income	1455	716	675	822	1260	1277	790	557	325	215
Capital expenditure	0	0	0	0	0	0	0	0	0	0
Operating cost	282	223	216	258	210	66	46	36	28	93
Lease	107	48	45	54	84	84	51	36	21	12
Tax	1021	595	341	367	582	823	716	467	304	138
Cash flow before tax	1066	445	414	510	967	1127	693	486	276	110
Cash flow after tax	46	-151	73	143	384	304	-23	19	-28	-28

Vessel and Regasification Owner company

	2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Income	0	0	0	0	58	216	216	217	216	218
Capital expenditure	0	0	0	2161	0	0	0	0	0	0
Tax	0	0	0	0	0	36	38	36	35	33
Cash flow before tax	0	0	0	-2161	58	216	216	217	216	218
Cash flow after tax	0	0	0	-2161	58	180	179	181	182	185
	2020	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
Income	216	218	217	215	216	217	219	213	175	149
Capital expenditure	0	0	0	0	0	0	0	0	0	0
Tax	31	30	28	26	24	22	19	17	14	11
Cash flow before tax	216	218	217	215	216	217	219	213	175	149
Cash flow after tax	184	189	189	189	192	195	200	196	161	138
	2030	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**
Income	107	48	45	54	84	84	51	36	21	12
Capital expenditure	0	0	0	0	0	0	0	0	0	0
Tax	9	7	6	5	5	4	3	2	1	1
Cash flow before tax	107	48	45	54	84	84	51	36	21	12
Cash flow after tax	98	41	39	49	79	80	48	34	20	11

Combined Cash flows

	2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Cash flow before tax	-358	-1241	-1590	-4238	-1041	1332	1568	1725	1783	1727
Cash flow after tax	-304	-946	-868	-3013	342	1995	1294	867	624	480
	2020	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
Cash flow before tax	1047	1136	1757	2089	2091	2178	2371	2319	1940	1685
Cash flow after tax	-118	195	914	1104	837	707	768	671	424	382
	2030	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**
Cash flow before tax	1173	493	459	564	1051	1211	744	521	297	122
Cash flow after tax	143	-110	112	192	463	384	24	53	-8	-17