European lease pricing and optimisation

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This article describes the main lessor pricing measures used within Europe, the way in which the lease economics are optimised, and some of the issues that arise when pricing European leases.

Lessor pricing measures. The main lessor pricing measures employed in Europe are the Multiple Investment Sinking Fund (MISF), the UK Actuarial method, and the French tax loan method.

MISF. The Multiple Investment Sinking Fund (MISF) method is the most popular method used for evaluating lessor returns worldwide. Countries that commonly use it include Germany and France, and outside Europe it is used in Australia, Japan, and the US.

The MISF method is well suited to the after-tax cash-flow profile of a lease, which consists of many cash inflows and cash outflows. After the last cash flow, the lessor has a zero investment balance, but the changing sign of the cash flows means that the investment balance may go down to zero and even turn negative at points within the lease.

This temporary surplus cash position is known as the sinking fund, or being dis-invested, or being re-invested.

The more well known Internal Rate of Return (IRR) method implicitly assumes that the investor is able to earn the same rate during surplus phases and investment phases.

The MISF method, however, assumes that this surplus cash is deposited and earns at a lower rate than the rate that is charged on invested cash. This overcomes two drawbacks of the IRR method.

The first drawback of the IRR's same-rate assumption is that it is unrealistic; deposit rates are usually lower than borrowing rates. The second drawback is that it gives rise to the condition of multiple solutions: more than one IRR may bring the investment balance to zero at the end.

The MISF method overcomes these two problems by using two rates:

- A yield rate that the investor charges on positive investment balances.
- A lower (and thus more realistic) sinking fund rate that the investor assumes they can earn on negative investment balances.

The use of a sinking-fund rate ensures that only one yield rate brings the investment balance to zero at the end:

- If the yield rate used is too high, then the investment balance is positive at the end.
- If the yield rate used is too low, then the investment balance is negative at the end (i.e. there is a sinking-fund balance).

It is common in Europe to assume a small sinking fund rate of just a few percent.

UK actuarial method. The most common method used to price leases in the UK is the Actuarial method. With this method, three rates are used:

- The cost-of-funds rate;
- The margin (also known as return or profit take out); and
- The re-investment rate.

The cost-of-funds rate when added to the margin may be thought of as being similar to the MISF yield. The lessor charges the cost-of-funds rate plus the margin upon its investment.

Likewise, the re-investment rate may be thought of as being similar to the MISF sinking fund rate.

The lessor assumes that this can be earned on its re-investment (sinking fund). It is common for the cost-of-funds rate to be LIBOR and the re-investment rate to be LIBID.

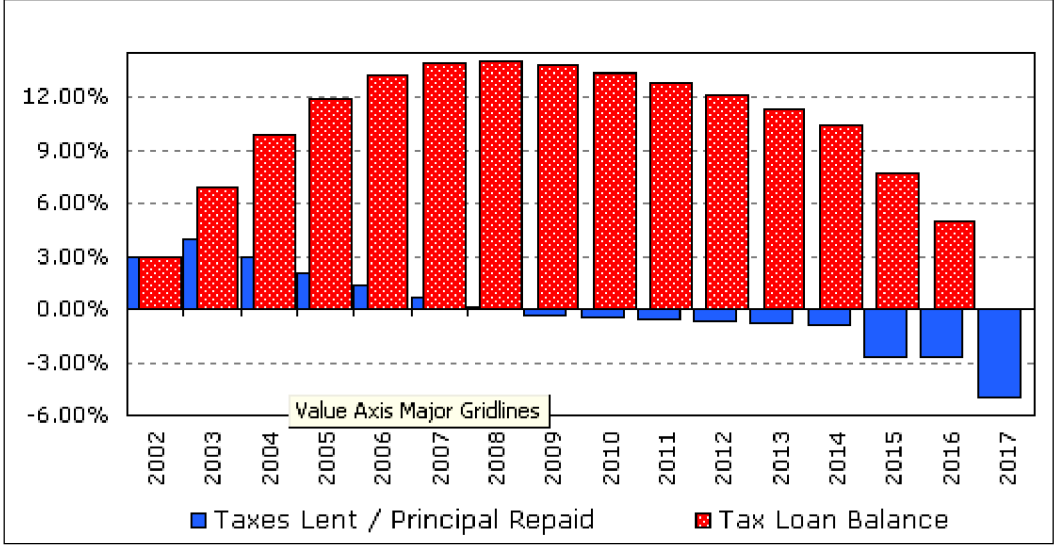
The UK Actuarial method differs from the MISF method in two ways. Firstly, whereas the MISF method uses instantaneous tax timing for the yield calculation, the UK Actuarial method uses actual tax timing.

This means that a UK net rate is not the same as the gross rate multiplied by 100% less the tax rate. The net rate needs to be a little bit more to reflect the advantage of not having to pay tax on the gross rate immediately.

The other difference is that, unlike the MISF calculation where cash flows are assumed to always occur at the end of each month (on a 30/360-day basis), the UK Actuarial calculation is a daily calculation. This means that the actual day of the month on which the cash flow occurs is used in the calculation of return (on an Actual/365-day basis).

French tax loan. In France, a lease pricing technique commonly employed is a tax loan. Instead of the lessor injecting equity at the beginning of the transaction, the entire purchase is financed using debt. As there is no equity on which to calculate a yield, the evaluation is based directly on the tax savings generated.

Table 1: French tax loan



The lessor partnership (known as a *Groupements d'Intérêt Economique* or GIE) comprises of partners who are able to make use of tax savings in the early years. The tax savings made by the partners are immediately lent to the partnership (GIE). This lending is known as the tax loan (*Avances de Différé Fiscal*).

As the partners have lent their tax savings back to the partnership, their net cash flow is zero. However, the partnership pays interest to the partners on the balance of the tax loan (the borrowed tax savings).

Similarly, when the partners have to pay tax, the partnership distributes the required amount (repaying the principal of the tax loan). Therefore the total net cash flow for the partners is the tax loan interest payments, and the appropriate measure of investor return is the tax loan interest rate.

An increasing number of French transactions now feature equity injections at the beginning of the deal. As a result, these deals are more like German leveraged leases, where the free cash and tax savings provide the return. These transactions typically use the MISF yield as a measure of the return.

Calculation versus optimisation. Lease pricing may be split into calculation and optimisation.

Calculation. Calculation is performed when there is just one unknown variable and thus one solution to the problem. This occurs when the lessee requires level (constant) rents and the lessor either funds the transaction entirely using equity or using a loan with a pre-determined drawdown and repayment pattern.

Under these circumstances the only unknown is the rent amount, which can be solved for to find the desired lessor return. Users of Microsoft Excel will recognize this as the "Goal Seek" tool.

Optimisation. When there is more than one unknown variable there are potentially an infinite number of solutions.

For example, consider the case where the lessor is able to choose the percentage of debt to equity.

Here, there would be one particular rent level that would give the lessor its yield with zero debt; another rent level that would give the lessor its yield with one-percent debt; and so on.

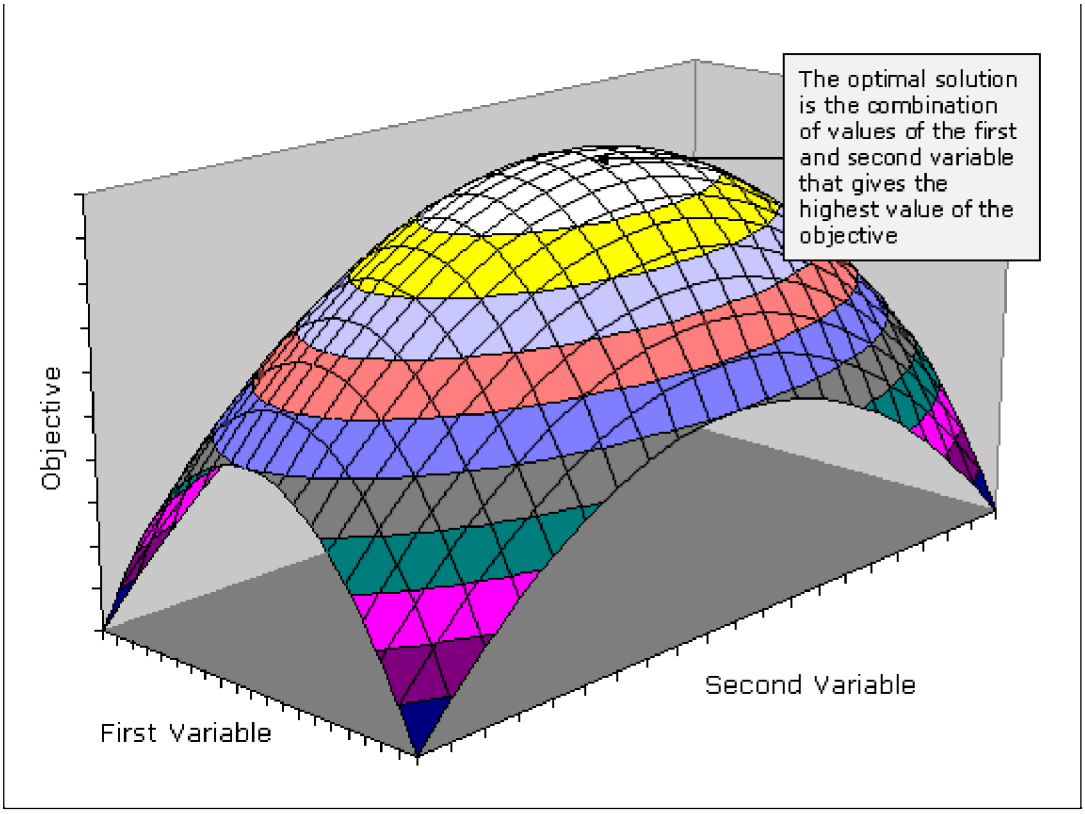
If the debt repayment profile need not be level (constant) then this introduces more unknown variables. Similarly if the lessee's rent profile need not be level then this introduces further unknown variables.

Although the extra unknown variables cause the pricing of the lease to become more complex, the advantage it brings is that better solutions may be found.

In general, optimisation is the process of choosing the best solution among all possible solutions to a problem. The optimal structure is the one that gives rise to the best (maximum or minimum) value of the user's objective.

Table 2 illustrates that the optimal solution in a simple example is the value of the first and second variable that gives the highest value of the objective.

Table 2: Finding the optimal solution



Lease optimisation means finding the rent, debt and tax profiles that satisfy the lessor's return requirements, but give the best rent profile for the lessee.

What is meant by "the best rent profile" varies from lessee to lessee, and could be the lease with the lowest average rent, the lowest implicit rate (the IRR of lease rentals), or the highest NPV benefit, but it is more usually the lease with the lowest present value of rents.

Optimising the lease economics. Leasing provides economic benefits essentially because of the concept of the time value of money.

This concept states that because of interest, it is beneficial to receive payments as soon as possible, and beneficial to make payments as late as possible.

Receiving money sooner and making payments later means that deposit accounts can be increased, thus earning interest, and loans reduced, thus saving interest.

This concept affects three main areas of lease pricing:

- Rent deferral;
- Tax deferral; and
- Interest rates.

Rent deferral. The time value of money means that the lessor prefers to receive rent as *soon* as possible, yet it also means that the lessee prefers to pay rent as *late* as possible.

In general, the lessee has a higher time value of money (it is often unable to make use of the tax deductions for interest, making its net interest rate higher) and so deferring the rent gives a more optimal result.

The deferred rent needs to be larger to compensate the lessor (to pay its interest) but the deferral advantage for the lessee outweighs this.

Increasing the length of the lease increases the amount of rent deferral and is thus one way of improving the economics.

At lease end it is common for the lessee to make a payment, related to the residual value (RV) of the asset. This could be a purchase option (which in Germany can be a lessor put option) or it could be a balloon rental (used in the UK).

Increasing the size of the lease-end payment also defers the lessee's payments and improve the economics.

The 3-D and contour graphs in tables 3 and 4 show the sensitivity of the present value of the lessee's payments (including the final residual value payment) to lease term and residual value in an indicative lease.

Table 3: PV sensitivity to lease term and RV (3D)

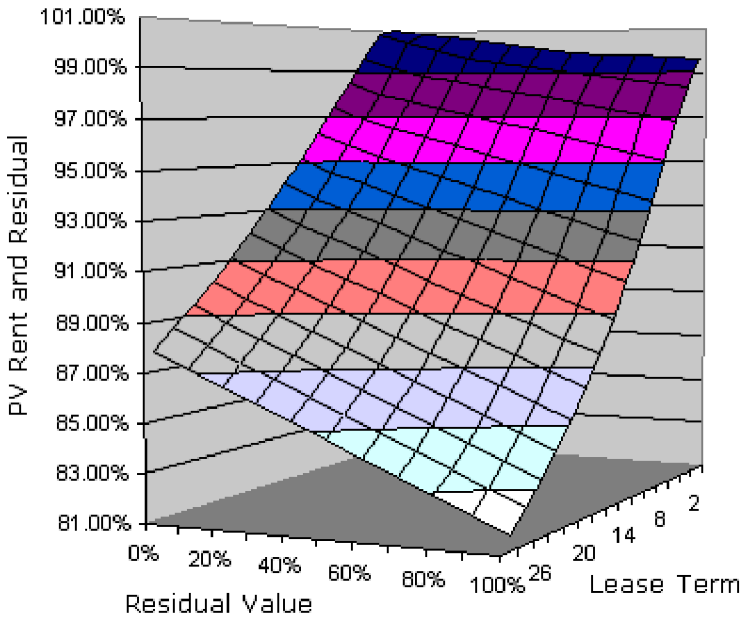
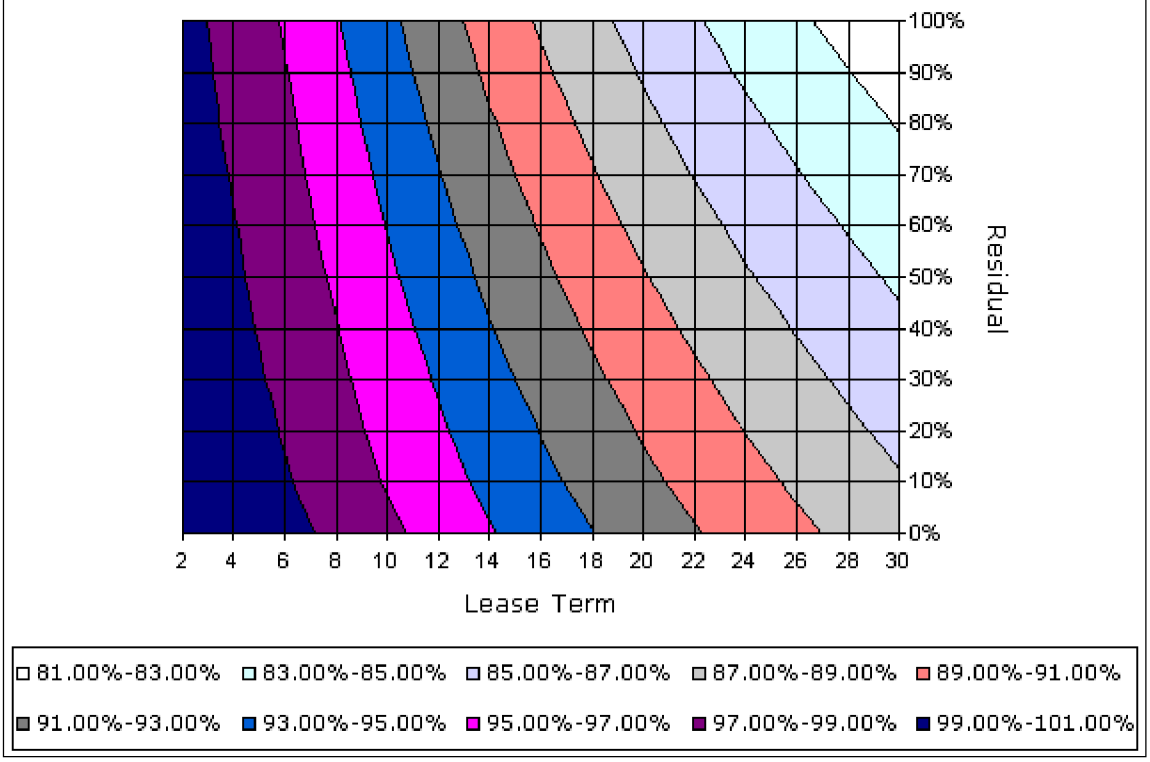


Table 5: PV sensitivity to lease term and RV (contour)



Tables 3 and 4 clearly show that extending the lease and increasing the residual value strongly improves the lessee's economics. However, the fair market value of the asset typically falls over time so it is unlikely to have a high residual value *and* long lease term.

By superimposing the asset's fair market value curve onto the graphs it is possible to pick the optimal combination of lease term and residual value. Computer software automatically does this.

Another way to introduce rental deferral is by escalating the rents. Most leases in Europe have level (constant) rents. However, sometimes leases have rents that escalate (increase) at a small rate, similar to the rate of inflation. This small escalation is enough to significantly improve the lease economics.

In the UK, finance leases that feature large rates of rental escalation have been subjected to a tax penalty since 1996.

This tax penalty, known as "the taxation of negative depreciation", increases the taxes due in the early years (effectively taxing the lessor on the larger accounting income instead of rent), but then reduces the taxes due in later years (when the accounting income is less than the rent).

Although the total tax penalty is zero, it has a detrimental effect due to the lessor's time value of money.

The accounting method the lessor uses directly affects the negative depreciation tax penalty.

Under the old Actuarial accounting, the optimal rental profile often resembled the "Nike swoosh" curve, with rents initially decreasing, and then later increasing. The initial decrease in rents reduced (or even eliminated) the lessor's negative depreciation tax penalty, and the later escalation gave deferral for the lessee.

If the lessee's time value of money was low, then the optimal profile of rent had little negative depreciation (the tax penalty, passed on to the lessee via higher rents, was significant). If the lessee's time value of money was high, then the optimal profile of rent had significant escalation, and a larger negative depreciation tax penalty (the benefit of deferral to the lessee far outweighed any increase in rent needed to pay for the tax penalty).

Under the new IAS accounting, the optimal rent profile features a large escalation of rents, as escalating rents are much less likely to give rise to the negative depreciation tax penalty.

Tax deferral. In order to promote investment governments offer tax incentives. These may come in the form of allowing certain forms of income or capital gains to be tax free, but are more often in the form of tax deferral.

In order to directly take advantage of a tax incentive one must be making a large enough taxable profit, which unfortunately, lessees usually are not.

Leasing is a well-established method in which these tax advantages may be passed on to the lessee.

Indeed in France, article 39 CA of the French tax code says that at least two thirds of the tax advantages must be passed to the lessee via reduced rents.

Similarly, in Germany section 2B of the tax code ensures tax savings are passed on to the lessee by limiting the lessor's yield including the tax savings to be no more than double the yield ignoring tax savings.

In general, every cash inflow must be taxed, and every cash outflow receives a tax deduction. The net effect is that tax is paid on profit.

Due to the time value of money, the lessor would like to receive tax deductions as soon as possible, and to make tax payments as late as possible. The quicker the tax depreciation of the asset (known as capital allowances in the UK), then the greater the lessor's tax deferral, and thus the lower the lessee's rents.

However, from April 2006 the UK Government will remove a funding-lease lessor's tax timing advantages of capital allowances, replacing them with a deduction equal to the principal part of the rent.

Unlike capital allowances, which recognize that assets depreciate more quickly at the beginning of their life, principal deductions depreciate the asset much more slowly at the beginning of the asset's life. This removes the tax deferral advantage.

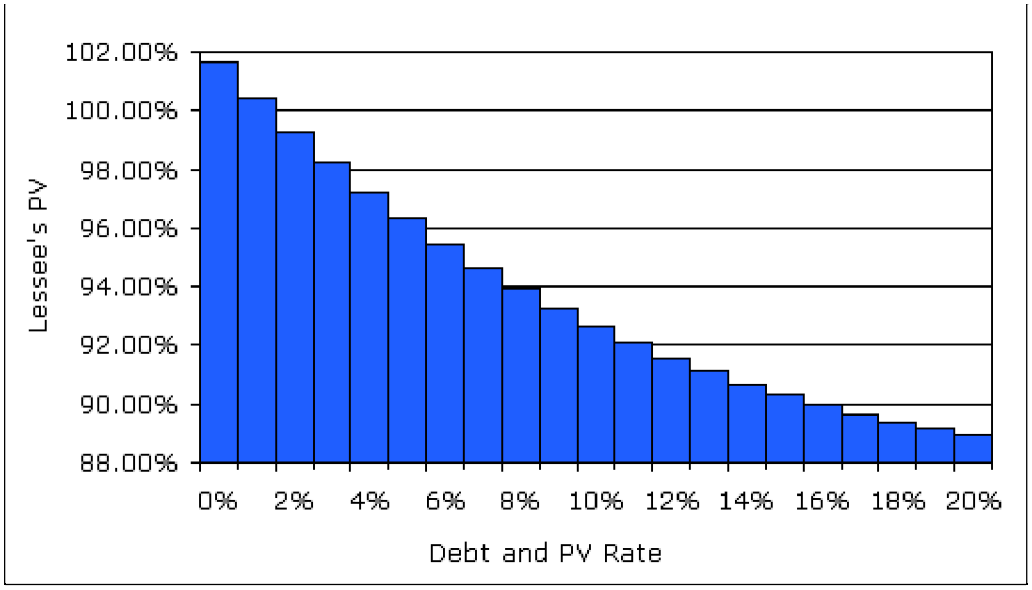
Other European countries continue to give tax depreciation. French moveable assets are typically depreciated between 125% and 225% of the straight-line rate. German moveable assets are typically depreciated at 200% of the straight-line rate, and some assets, such as films and small items, achieve even greater rates of tax depreciation.

The French government supported French ship leasing not just through tax deferral, but also by tax exemption. The capital gain made by the French lessor when the lessee repurchases the ship was exempted from tax, which greatly reduced the lessee's rents.

This ceased in 2004 after accusations from the EU that this was state aid designed to distort competition.

Interest rates. In order for rent deferral and tax deferral to be worthwhile, the time value of money must be significant. The financial benefit of leasing is extremely sensitive to interest rates as table 5 illustrates.

Table 5: Sensitivity to interest rate



Although increasing interest rates increase the lessor's costs, and thus the rents, the benefit of deferral increases and this far outweighs the rental increase. This puts lessors in the lonely situation of cheering increases in base interest rates.

European variance. Despite the International Accounting Standards, European leases continue to vary from country to country.

Each country uses a different lessor pricing measure, and each country gives different tax treatments. Leases of different assets within the same country can also be very different, due to the tax depreciation and fair market value curves.

However, the key concept of the time value of money is common to all of the leases, and the more complex leases become, the bigger the scope for optimisation.

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World Leasing Yearbook 2006, Euromoney