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Planes, trains and ships – unveiling the investment community's best kept secret

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Introduction

This paper explores the characteristics of operating leases over transportation assets as a new alternative asset class, as well as the impact that an allocation to operating leases can have on the returns and volatility of a balanced portfolio. To achieve this, Allco has undertaken extensive research into investment returns from operating leases in the aviation, shipping and rail sectors over the last 20 years. Allco has constructed accumulation indices to estimate these returns and to allow comparison to traditional asset classes.

The research suggests that operating leases have a number of attractive characteristics for investors:

- solid long-term returns;
- low volatility and a high cash component; and
- low correlations to traditional asset classes.

Combined, these features provide operating leases with diversification potential when added to any portfolio. The low volatility and correlations also suggest that returns can be geared to address a range of investor criteria.

Operating leases have been in widespread use in the aviation, shipping and rail industries over a long time period. However, they have been difficult for investors to access for several reasons: (1) the specialised skill-set required to manage a portfolio of leases; (2) high barriers to entry; and (3) few specialised lessors listed on stock exchanges.

Allco is developing several products with the objective of providing access to this asset class for wholesale and retail investors.

What is an Operating Lease?

There is a variety of leasing structures currently in use and the line between the traditional division of leasing finance into 'operating lease' and 'finance lease' has become somewhat blurred. Operating and finance leases involve different risks and, therefore, require distinctly different skills to manage. The following three attributes represent the main points of difference between the two lease types:

- *Term.* Operating leases tend to have a shorter term of between 5 and 10 years, compared to a finance lease where the term is usually the useful life of the asset.

- *Residual value*. Under an operating lease, the lessor is exposed to residual value risk, whereas under a finance lease this risk is generally borne by the lessee.

- *Accounting treatment.* Assets financed via operating lease are off-balance sheet to the lessee. Assets under a finance lease are usually on-balance sheet.

Advantages of Operating Leases as a Source of Financing

Residual Value Risk

Operating leases remove residual value risk from the lessee. This means that the operator can focus on its core business instead of managing asset values, which requires specialist expertise in a number of disciplines including financial monitoring, legal capability and technical proficiency.

Flexibility

Leasing allows operators flexibility in situations where they are uncertain about their future capacity requirements. Short term leases can enable operators to take advantage of temporary demand bubbles, while they can also efficiently reduce their fleet in the case of any unexpected events, such as acts of terrorism or natural disasters.

Obsolescence Risk

Operating leases reduce obsolescence risk for the operator. If a new generation asset is introduced and represents a clear improvement over an existing model, the lessee can easily choose not to re-lease the old asset, opting instead for the new version. This process is simpler than selling one asset and using the proceeds to finance another, which, again, requires specialist knowledge of the asset markets.

Efficient Use of Shareholders' Capital

Operating leases also provide 100% off-balance sheet financing at a competitive cost of capital, which ensures that shareholders' funds are being utilised in the most efficient manner.

Overview of Global Aviation, Shipping and Rail Markets

Aviation

The commercial aviation industry is represented by approximately USD 400 billion of assets. The market for aircraft is deep, liquid and global with a large number of participants. Operating leases make up over 30% of the total market[1], which has been in a steady upward trend over the last 15 years, suggesting that the operating lease market is set to grow at a faster rate than the aviation sector as a whole[2]. GECAS and ILFC currently account for over 50% of the operating leasing market[3].

A typical aircraft has a useful life of 25 years, which can be extended with freighter conversion. Lease terms generally run for 5 to 10 years. Low-cost carriers tend to lease a higher proportion of their fleet than legacy airlines and their rapid growth in recent years has underpinned the increased market share of operating lessors.

Demand for commercial aircraft derives from the demand for air travel, which is strongly correlated to global GDP. The recovery in air travel following 9/11, the trend toward liberalisation of national air markets, the rapid economic development of China and India and the emergence of low-cost carriers has led to a significant increase in the demand for travel and is expected to fuel further growth in the future.

Aircraft values are inherently cyclical. This is primarily because of the lag between the time an order for a new aircraft is placed with a manufacturer and the date this aircraft is delivered. While back-orders fluctuate, the supply of new aircraft to the market is relatively steady whereas demand can change rapidly. These factors can result periods of mismatch between supply and demand, creating the characteristic cyclicality in asset values.

Shipping

The global shipping industry is represented by approximately USD 500 million of assets[4]. As with aviation, the shipping market is deep, liquid and global, with a high level of transparency. Asset values are generally more volatile than aviation, requiring expert asset management.

Shipping assets generally have a useful life of approximately thirty years. Charter terms vary and depend on the type of vessel and the state of the market, ranging from 6 months to 10 years. The charter market is highly segmented with a large number of privately owned niche providers.

Three types of vessel comprise the majority of the shipping market: tankers, bulk carriers and container ships. Tankers and bulk carriers generally carry raw materials (liquids and solids respectively), while container ships carry standard-sized intermodal containers designed for higher-value finished goods.

Growth in global GDP and world trade are strong demand drivers for all three vessel types, as is the demand for the particular product that a vessel carries. Due to the surge in demand for raw materials from China and India and, consequently, the increase in their trade of containerised goods, all three vessel types have experienced strong growth over recent years and asset values are at historic highs.

Rail

While information regarding the size of the global freight rail market is scarce, Allco estimates it to be USD 150-200 billion in assets, comprising approximately 4 million rail cars and 75,000 locomotives[8]. Unlike aviation and shipping, rail assets are not global: the largest markets are North America, Europe, Asia and Australia, respectively. The US alone represents approximately 36%[9]; it is one of the few countries where significant private investment is being made.

Freight rail competes with other modes of transport, such as air freight and freight trucking. Whilst rail is an extremely capital-intensive industry, the economics of rail transport are superior to both air and truck freight once infrastructure is established. This, as well as significant constraints experienced by truck competition, has led to an increase in rail's share of total inland haulage in North America over the last 5 years, which currently stands at just over 40%[10]. While the leasing market accounts for approximately 50% of total rail assets in North America, this percentage is rising. Private companies supplied over 85% of rail assets in the last 5 years[11].

As with other transportation assets, rail asset values tend to be driven by GDP of the region in which they operate, as well as the growth in world trade. In addition, demand for specific car types is influenced by the demand for the particular product that the car is designed to carry.

Analysis of Operating Lease Returns

Statistical Analysis

Allco has undertaken extensive research to estimate returns from operating leases over aviation, shipping and rail assets, using asset value and lease rate data sourced from asset consultants who specialise in these assets. While the data was generally of high quality, certain assumptions needed to be made to enable quantitative analysis. Therefore the analysis presented in this section should be used as a guide rather than taken as exact results.

Operating leases over aviation, shipping and rail generated attractive risk-adjusted returns compared to traditional asset classes. The following table summarises these results.

	Date Range [a]	Returns (p.a.) [b]	Volatility
Aviation	1982-2006	8.3%	3.3%
Shipping	1986-2006	13.0%	10.5%
Rail	1986-2006	9.3%	4.3%

[a] Some asset sub-classes commence at later dates due to unavailability of data.

[b] Returns assume no tax or frictional costs, as per standard index methodology.

Source: Allco Finance Group research estimates

As shown in the table below, the returns generated by operating leases also exhibit low correlations to traditional asset classes of equities, bonds and property.

	Aviation	Shipping	Rail
Aviation	1.00		
Shipping	0.25	1.00	
Rail	0.69	0.54	1.00
Australian Shares	-0.03	-0.05	0.25
Global Shares	0.04	0.13	0.56
Global Bonds	-0.02	0.15	-0.11
Global Property	-0.04	0.31	0.38
Global Infrastructure	0.34	0.43	0.82

Australian Shares represented by S&P / ASX All Ordinaries Accumulation Index; Global Shares represented by S&P / Citigroup BMI World Total Return Index (USD); Global Bonds represented by JPMorgan Global Government Bond Index (USD); Global Property represented by S&P / Citigroup BMI World Property Total Return Index (USD); Global Infrastructure represented by Macquarie Global Infrastructure Total Return Index (USD).

Source: Bloomberg, Allco Finance Group research estimates

In addition, operating lease returns have a high cash component due to the depreciating nature of the assets. The actual cash yield can vary according to market cycles, credit rating of the lessee and age of asset, just to name a few factors. However, the 8.3% return on aviation, for example, might consist of a cash yield circa 12% and a 3.7% reduction in capital. The cash yield is stable during the term of the lease and is particularly attractive to income investors.

Methodology

The index for each asset class was constructed by building a portfolio of assets representative of the market in its composition by sub-class and age. Lease income, combined with the change in the value of all the assets in the portfolio, was used to calculate the return from the portfolio over a particular time period. Returns from multiple time periods were aggregated into a total return index for each asset class.

Step 1 – single asset returns

The index for each asset class consists of several portfolios, each representing a sub-class. A sub-class is a type of aircraft (e.g. A320-200), a type of ship (e.g. 300k dwt Tanker) or a type of rolling stock (e.g. Covered Hopper). The aviation index comprises 41 different aircraft types, the shipping index comprises 16 types of vessels, and the rail index comprises 8 types of rolling stock. Each portfolio consists of a diversified collection of assets drawn from that sub-class.

The first step was therefore to determine the individual assets that formed each portfolio. The main objective of this step was to ensure that each build year was represented in the portfolio so that pools of these assets were diversified by age of asset.

Step 2 – portfolio returns

Once single asset returns were calculated, assets of the same type were grouped into portfolios. Indices representing portfolio returns were constructed for each portfolio.

Step 3 – asset class returns

Portfolios belonging to the same asset class were combined and indices representing each asset class were constructed as a weighted average of the portfolio indices. The weightings used were based on the composition of the operating lease markets in aviation, shipping and rail.

The above methodology generated indices at all levels of detail, from individual assets to asset classes; these therefore allowed returns, volatilities and correlations to be estimated at each stage of the process.

Why are Volatilities and Correlations Low?

The research suggests that operating lease returns from aviation, shipping and rail all exhibit low volatility per unit of risk compared to traditional asset classes. In addition, correlations between aviation, shipping and rail operating leases, and returns from traditional asset classes, are similarly low. Both of these effects can be at least partially explained by the influence that the lease contract has on the value of the asset.

Using a new A320-200 as an example, the value of the aircraft is the present value of the future income that this aircraft is expected to generate. Within the operating lease universe, this income can be derived from short-term or 'spot' leases, long-term 10-year leases, or, finally, the aircraft might be leased for the entirety of its useful life. Economic theory suggests that the present value of these future income streams, added to the scrap value at the end of the aircraft's life and discounted at a rate which appropriately allows for the relative risk of each income stream will represent the aircraft's current market value.

Once the A320-200 is placed into a 10 year operating lease, the cash flows in the 10 years are locked in (subject to some allowance for credit risk). The value of the aircraft is inherently more stable when the income it generates over the first 40% of its life (assuming a typical useful life of 25 years) is not subject to market cycles. This stability in the value of the asset, together with stable cash flows, results in low volatility of returns. It also means that the returns are not as susceptible to market shocks, which reduces their correlation with traditional asset classes.

The value of the aircraft under lease can still fluctuate to the extent that expectations change about income in years 11+. Due to the discounting effect, these value fluctuations are minor at the beginning of a lease and increase closer to its maturity. In other words, the volatility of returns is close to 0 at the beginning of a lease and approaches asset value volatility at the end of a lease.

The Risks

Operating leases are simple in principle and consist of two basic variables: net lease income and asset depreciation. A third possible factor is the level of gearing (and the cost of debt), but this is not discussed within the scope of this paper.

Residual Value Risk

Residual value risk is the risk that at the end of the lease term, the asset is worth less than the lessor assumed in their pricing. This is the primary concern of operating lessors, given the lease cash flows are locked in (ignoring credit risk for the moment) and the uncertainty lies in whether at the end of the lease term the lessor makes a profit or a loss on the residual value.

Asset values change in response to various aspects of the market. The sole specialty of certain asset consultants is to model and predict future asset values for different types of aircraft, ships and rolling stock. Operating lessors work with these consultants to continually monitor and update their residual value position.

While planes, trains and ships are depreciating assets, the values during their useful life can vary significantly from the straight-line to scrap depreciated values. For example, a 10-year old 300,000-ton tanker could be purchased for $US 40m in 1995, while in 2005 (height of the current shipping boom) a tanker of the same age and tonnage was worth $US 90m (while the original tanker, now 20 years old, maintained its value at just over $US 40m)[12]. Similarly, the delay in the delivery of the new Airbus A380 aircraft has driven up prices in certain segments of the aviation market as airlines delay the retirement of their current fleet. On the other hand, the drop in air travel following 9/11 most severely affected values of older aircraft as they were the first ones retired by airlines, while newer and more flexible aircraft managed to hold their values[13].

Operating lessors manage residual value risk by:

- ensuring that their fleet is modern and well maintained;
- ensuring that assets in their fleet have a wide user base;
- diversifying by asset type;
- diversifying by lease maturity date; and
- using conservative assumptions in their pricing

In addition, lessors may employ specialist strategies, such as converting older aircraft to freighters, to extend their useful life and increase value.

Re-Leasing Risk

Re-leasing risk refers to the ability of a lessor to minimise the amount of time that an asset is not on lease, particularly in cases when the asset is repossessed ahead of schedule due to default.

Re-leasing risk is also relevant when the lessor negotiates lease terms in bull and bear markets. When demand outstrips supply and lease rates are firm, it is in the lessor's best interest to set the longest possible lease term to take advantage of the favourable conditions. On the other hand the lessee, generally targets the shortest possible lease term in order to re-negotiate once the market reverts back to normal levels. Operating lessors must strike a balance to achieve a satisfactory, sustainable solution for the lessee while maximising returns for their shareholders.

Because asset values and lease rates are inextricably linked, lessors manage re-leasing risk by maintaining a fleet of modern, well-maintained assets that are in high demand by a wide range of operators.

Credit Risk

Credit risk is another important consideration for operating lessors, although not unique to the industry. It concerns the potential for a lessor to lose income due to a lessee defaulting on its lease commitments.

Lessors manage their credit risk by:

- leasing assets to operators with a high credit rating; and
- ensuring that their portfolio of assets is highly marketable and can be quickly re-leased in the event of a lessee defaulting on its lease obligations.

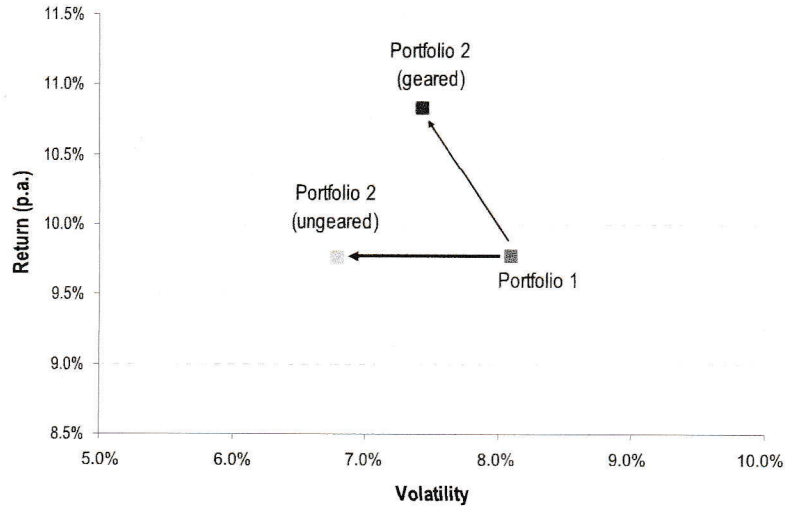
Portfolio Applications

The research suggests that an allocation to operating leases on transportation assets to a diversified portfolio of traditional assets can increase portfolio returns while reducing portfolio risk due to the low correlations operating leases have to traditional asset classes.

Below is an illustration of 2 portfolios: the first has no allocation to operating leases; the second has a 5% allocation to each of the 3 asset classes discussed above.

Asset Class	Portfolio 1 Allocation	Portfolio 2 Allocation
Cash	10%	10%
Global Bonds	40%	35%
Australian Equities	30%	25%
Global Equities	10%	5%
Global Property	10%	10%
Aviation Operating Leases	0%	5%
Shipping Operating Leases	0%	5%
Rail Operating Leases	0%	5%

Note: Illustrative example



Source: Allco Finance Group research estimates, industry standard gearing was assumed to be 75% debt for aviation and rail and 65% debt for shipping.

Australian Shares represented by S&P / ASX All Ordinaries Accumulation Index; Global Shares represented by S&P / Citigroup BMI World Total Return Index (USD); Global Bonds represented by JPMorgan Global Government Bond Index (USD); Global Property represented by S&P / Citigroup BMI World Property Total Return Index (USD); Global Infrastructure represented by Macquarie Global Infrastructure Total Return Index (USD).

Allco's estimates of returns, standard deviations and correlations of these asset classes over the last 20 years suggest that the return from Portfolio 1 is 9.8% p.a. with a volatility of 8.1%. Assuming operating lease returns are ungeared, Portfolio 2 produces the same return with a volatility of 6.8%. This highlights that even a small allocation to operating leases can reduce portfolio volatility while maintaining returns.

In addition, due to the low volatility and diversifiable nature of the risk, gearing can be used to boost operating lease returns without adding significant portfolio risk. Using industry standard gearing improves Portfolio 2 returns to 10.8% p.a. with a volatility of 7.4%. The risk / return characteristics of a portfolio can therefore be easily tailored to suit the risk appetite of investors.

These qualities make operating leases an attractive proposition to wide range of managed portfolios.

Conclusion

Although operating leases over transportation assets are relatively new as an investable asset class, they have played a major role in financing assets for the aviation, shipping and rail industries over many years. Moreover, operating lessors' share of these markets continues to increase as operators focus on their core businesses and opt for off balance sheet funding.

Operating leases provide stable and uncorrelated long-term returns with a high income component, which can improve the risk-return characteristics of any portfolio but are particularly attractive to income investors. With over 25 years experience in the leasing sector, Allco possesses the necessary industry knowledge and asset management skills to successfully manage a portfolio of operating leases. To this end, Allco is developing funds that will deliver these attributes for use in wholesale and retail investment portfolios.

End Notes

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13. Allco estimate