AVIATION LEASING AS PART OF A BROADER INVESTMENT PORTFOLIO
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INTRODUCTION

Investec has engaged an independent consultant to conduct an analysis of aircraft leasing as an asset class.

Specifically, the purpose of this paper is threefold:

• To provide investors with an understanding of aircraft assets and an aircraft leasing business model. We will explore the investment characteristics of both equity and debt investments in this sector.

• To analyse the aircraft asset class relative to other illiquid alternative asset classes with similar investment characteristics. Based on a number of common physical and economic characteristics we have compared aircraft leasing to infrastructure and property sectors. Specifically, the focus is on core/core plus infrastructure types and core/value add property investments.

• To provide investors with a broader portfolio perspective relevant for these sectors.

We have endeavoured to analyse all three sectors using the same framework. Due to the newness of aircraft leasing as an asset class, we have provided a more comprehensive analysis of this sector relative to infrastructure and property that are well understood by investors.

The structure of the paper is as follows:

• Section 1, we outline some basic physical and economic characteristics of the assets, the industry dynamics and its key players. We also explain the key approaches used to value the assets.

• Section 2, we focus on the economics of these assets/businesses and their financial characteristics. Specifically, we will go through the key sources of value creation and risks. We compare the sensitivity of these asset classes to a number of common risk factors and highlight some idiosyncratic risks for each of the assets. We then describe the main risk categories applicable for each asset.

• Section 3 starts with a brief description of typical capital structures employed in these assets. We then discuss the investment characteristics of both debt and equity investments for each sector.

• Section 4, we draw upon the analyses in the previous sections to summarise the common attributes of the three asset classes and highlight the key differences. We discuss a number of issues in relation to the role of these asset classes in the portfolio, asset allocation issues, implementation structures, etc.

We note that the focus of this paper is on the characteristics of broad asset classes rather than on any specific, targeted investment approaches.
EXECUTIVE SUMMARY

Compared to property and infrastructure, aircraft leasing investments are a new asset class. The sector’s fragmented nature, its inherent lack of transparency and the sparse performance data have made it difficult for many investors to analyse and understand this type of investment. Based on the analysis of the aircraft leasing business model, the sources of value creation and the financing structures available to the sector, aircraft leasing is a viable investment that should be considered by institutional investors.

Aircraft assets share a number of common characteristics with other alternative assets, namely infrastructure and property. They are all hard, illiquid assets with long economic lives that require large upfront capital expenditure that is typically financed with a significant level of debt. They also all generate relatively predictable cash flows and are generally more liquid than either property or infrastructure.

With regards to the differences between these asset classes, the main ones are:

- Compared to property and infrastructure, cash flows from aircraft assets decline with the age of the aircraft (albeit cash flows increase relative to the depreciated value of aircraft as they age). This means that aircraft do not provide the same inflation hedge as infrastructure and property do.

- Aircraft are mobile, fungible assets priced in US dollars. As such they are global in their recognition, and easy to relocate/re-lease to different geographies and different clients, in contrast to property and infrastructure assets that are predominantly influenced by local factors.

- While the long term value of aircraft is predictable through the cycle, these assets appear more sensitive to the economic cycle compared to core infrastructure and property assets. This, plus their homogenous nature means that their values are impacted to a greater degree by common risk factors rather than asset specific ones. This is not the case for infrastructure and property.

- The aircraft market is much more dynamic compared to the one for property and infrastructure, as there are a number of factors that are changing on both the supply and demand side. Further, information on infrastructure and property deals appear to be more readily available to the public compared to the comparable information for aircraft (valuation, purchase price). This combination makes the aircraft market less transparent to the investors who are not closely following the market and therefore investing in the asset class requires stronger manager selection (i.e. need to work with managers who are “in-the-flow”).
With regards to their general investment characteristics, we note the following:

- Similar to property, aircraft should offer a relatively high return component from income compared to infrastructure where returns tend to be dominated by capital gain.

- Based on forecast returns for aircraft, the available historical returns, and adjusting for the impact of gearing on infrastructure (high) and property (low), returns from aircraft should be similar to returns generated from "core plus" infrastructure assets over the longer term. We would expect aircraft assets to generate higher returns than core property investments.

- Relative to infrastructure and property, a higher level of gearing from the start is necessary to generate more competitive equity returns from aircraft. Higher gearing is a function of the requirement to amortise debt either in line with or faster than the aircraft depreciates (i.e. ensuring investor’s NAV remains constant or increases even though the aircraft is a wasting asset). The transparency around lease payments and the strong security provisions embedded in the finance structures lend this asset class to a higher level of gearing.

- The matched funding in US dollars that is available in aircraft finance reduces a number of investment risks (refinancing, currency, interest rates) that exist in infrastructure and property investments. This should reduce the volatility of returns from aircraft investments relative to infrastructure and property.

- While not exposed to credit markets directly, aircraft leasing investments carry a higher credit risk (the risk of default of the airlines) compared to infrastructure and property. In the case of an airline default, and assuming the ownership of the right aircraft, the credit risk is transformed into a risk of re-leasing the asset to another credit worthy airline within a short period of time (i.e. default and re-lease risk). This ultimately depends on the strength of demand for air travel and available capacity in default situations.
Like property and infrastructure, aircraft assets have generated considerably less volatile returns relative to listed markets. Their performance on a risk adjusted basis should be as attractive as Infrastructure, albeit this is difficult to validate using historical performance due to the lack of comparable data.

The main benefits of the inclusion of aircraft investments into a diversified portfolio are their attractive absolute returns and the potential to improve diversification especially during times of financial assets distress.

Both infrastructure and core property assets/investment have some growth characteristics as their value increases over time due to the growing cash flows. Hence, when compared to listed market asset classes they are sometimes likened to a “bond with a growing coupon” (infrastructure) or to “index-linked bonds” (property).

Aircraft assets have some unique investment characteristics and hence it is difficult to find a listed market comparison. Given the high level of yields generated by the sector and the relative risks from aircraft investments, they share some similarities with High Yield bonds (HYBs). However, they differ from HYBs in a number of ways: HYBs are unsecured whilst aircraft investments are secured; HYBs are interest only while each aircraft lease payment is a mix of principal and interest. Therefore HYBs carry a greater principal risk than aircraft as provided you hold an aircraft through its economic life the capital at risk diminishes over time. Aircraft investments are significantly less volatile than HYBs, which is a function of their unlisted nature. Based on these similarities and differences aircraft leasing investments can be likened to a “HY, secured, amortising bond”.

Both debt and equity investments in aircraft provide exposure to a dynamic sector with a growing opportunity set. Leasing, which has financed 35-40% of new deliveries over the past decade, is set to increase its share in aircraft finance. Large aircraft deliveries driven by emerging markets growth and the needs for fleet replacement over the next three to five years will need to be financed at a time when liquidity is scarcer and risk is being repriced. This backdrop creates strong tailwinds for the sector providing an opportunity for the early investor to potentially earn outsized investment returns.

The highly dynamic and fragmented sector is likely to attract more players from the deep pool of capital looking for competitive risk adjusted returns. Given this, the cyclicality of the industry and the lack of historical performance data it could be argued that aircraft investments should be considered within the opportunistic category in a diversified portfolio. Alternatively, these investments can be included into the absolute return part of the portfolio, however, it is important to take account of its liquidity profile within a broader portfolio context. Another way to implement these investments into the portfolio is to allocate to aircraft investments within the private debt category, with the aircraft equity investments (junior debt) being part of the higher yielding private debt component.

Finally, to extract attractive returns from this asset class, it is necessary to employ a skilful manager with strong credit and debt arranging skills who is nimble and well plugged into this dynamic market. A strong technical asset management capability is also critical. On a relative basis, diversification and active portfolio management are more important in this asset class compared to infrastructure and property.
### SUMMARY TABLE:
**AIRCRAFT VS INFRASTRUCTURE AND PROPERTY**

<table>
<thead>
<tr>
<th>PHYSICAL AND ECONOMIC CHARACTERISTICS</th>
<th>AIRCRAFT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assets nature</td>
<td>Illiquid/Homogenous/Global /Mobile /Fungible</td>
</tr>
<tr>
<td>Scale</td>
<td>Large for a portfolio of planes ($40mn - $200mn)</td>
</tr>
<tr>
<td>Economic life</td>
<td>25 years+</td>
</tr>
<tr>
<td>Currency</td>
<td>US dollars</td>
</tr>
<tr>
<td>Financing</td>
<td>Large amount of debt financing</td>
</tr>
<tr>
<td>Cash flows</td>
<td>Yes - transparent and declining with the age of asset</td>
</tr>
<tr>
<td>Main use of Cash flow</td>
<td>Depreciation, Debt servicing, Equity distribution</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INVESTMENT CHARACTERISTICS</th>
<th>AIRCRAFT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expected returns</td>
<td>12- 15% (in US$)</td>
</tr>
<tr>
<td>Return profile</td>
<td>Balance of Yield and Capital gain</td>
</tr>
<tr>
<td>Risk profile /Other risks</td>
<td>Medium matched funding - low financing, no currency and low interest rates risk</td>
</tr>
<tr>
<td>Level of gearing</td>
<td>65% - 75% (depending on vintage)</td>
</tr>
<tr>
<td>Listed market comparable - Conceptualised</td>
<td>Secured High Yield amortising bond</td>
</tr>
<tr>
<td>Factor Risk exposure - Market</td>
<td>Credit - High exposure</td>
</tr>
<tr>
<td>Factor Risk exposure - Economic/ Fundamental</td>
<td>Growth and Leverage - High exposure</td>
</tr>
<tr>
<td>Factor Risk exposure - Structural</td>
<td>Urbanisation, EM growth and Environmental - High exposure</td>
</tr>
<tr>
<td>Use in the portfolio</td>
<td>Absolute returns Yield</td>
</tr>
<tr>
<td>Asset Allocation</td>
<td>Opportunistic, Absolute return, Private debt</td>
</tr>
</tbody>
</table>
### Summary Table: Aircraft vs Infrastructure and Property (Mainly Core)

<table>
<thead>
<tr>
<th>Infrastructure (Core and Core Plus)</th>
<th>Property (Mainly Core)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assets Nature</td>
<td>Illiquid/Heterogeneous/Local</td>
</tr>
<tr>
<td>Scale</td>
<td>Very large - $hundreds of millions /several billions</td>
</tr>
<tr>
<td>Economic Life</td>
<td>35 years+</td>
</tr>
<tr>
<td>Currency</td>
<td>Large - $100mn - $1bn +</td>
</tr>
<tr>
<td>Financing</td>
<td>Some debt financing</td>
</tr>
<tr>
<td>Cash flows</td>
<td>Yes - transparent and growing</td>
</tr>
<tr>
<td>Main use of Cash flow</td>
<td>Depreciation, Equity distribution, Opex,</td>
</tr>
<tr>
<td>Expected Returns</td>
<td>12-15% (in US$)</td>
</tr>
<tr>
<td>Return Profile</td>
<td>Balance of Yield and Capital gain</td>
</tr>
<tr>
<td>Risk Profile /Other risks</td>
<td>Medium matched funding - low financing, no currency and low interest rates risk</td>
</tr>
<tr>
<td>Level of gearing</td>
<td>Up to 85% for Core</td>
</tr>
<tr>
<td>Listed market comparable</td>
<td>High Yield</td>
</tr>
<tr>
<td>Asset Allocation</td>
<td>Opportunistic, Absolute return, Private debt</td>
</tr>
<tr>
<td>Use in the portfolio</td>
<td>Separate Property allocation or the Real asset category</td>
</tr>
</tbody>
</table>

### Investment Characteristics Aircraft vs Infrastructure (Core and Core Plus) Property (Mainly Core)

<table>
<thead>
<tr>
<th>Infrastructure (Core and Core Plus)</th>
<th>Property (Mainly Core)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expected returns</td>
<td>8 - 15% (in local currency)</td>
</tr>
<tr>
<td>Return Profile</td>
<td>Largely Yield</td>
</tr>
<tr>
<td>Risk profile /Other risks</td>
<td>Medium financing, currency and interest rate risk</td>
</tr>
<tr>
<td>Level of gearing</td>
<td>Up to 85% for Core</td>
</tr>
<tr>
<td>Listed market comparable</td>
<td>Index linked bonds</td>
</tr>
<tr>
<td>Asset Allocation</td>
<td>Separated Infra allocation or the Real asset category</td>
</tr>
<tr>
<td>Use in the portfolio</td>
<td>Separate Property allocation or the Real asset category</td>
</tr>
</tbody>
</table>

### Inflation Exposure - Market

<table>
<thead>
<tr>
<th>Infrastructure (Core and Core Plus)</th>
<th>Property (Mainly Core)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor Risk exposure - Market</td>
<td>High exposure</td>
</tr>
<tr>
<td>Factor Risk exposure - Economic/Fundamental Growth and Leverage</td>
<td>Medium to High exposure Inflation - High exposure</td>
</tr>
<tr>
<td>Factor Risk exposure - Structural</td>
<td>Generally low exposure for Core and Core plus infra; can be High to Environmental factor</td>
</tr>
</tbody>
</table>

### Absolute Returns

<table>
<thead>
<tr>
<th>Infrastructure (Core and Core Plus)</th>
<th>Property (Mainly Core)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yields</td>
<td>Yield</td>
</tr>
<tr>
<td>Inflation hedge</td>
<td>Diversification</td>
</tr>
<tr>
<td>Separate Infra allocation or the Real asset category</td>
<td>Separate Property allocation or the Real asset category</td>
</tr>
</tbody>
</table>
Section 1
SECTOR / ASSET LEVEL CHARACTERISTICS AND COMPARISONS
1.1. AIRCRAFT ASSETS

Definition and types of aircraft assets

The focus of this study is on commercial aircraft used by airlines for passenger and freight transport. Aircraft display the following physical and economic characteristics:

- They are hard assets with long economic lives. Generally speaking, the current generation of 100+ seat commercial jets have an economic life of around 25 years. Plenty will still be in commercial use beyond 30 years and some aircraft will have their economic life extended through cargo conversion.

- They have a stable and predictable product profile; as a naturally wasting asset they have a set amortisation and matching cash flow schedule.

- They have a long product cycle (depending on the aircraft type this can be around 4 years from order to delivery) with high barriers to entry.

- Aircraft are denominated in US dollars. They are truly global in their recognition and usage.

- They are highly mobile and can be easily re-deployed.

- Because of their mobility and their stable product profile, they are fungible assets.

- Depending on size and technology, the value of a new commercial aircraft typically ranges from ~$40mm to ~$200mm.

- Due to their high cost, purchase of aircraft are significant capex commitments for airlines.

- They are typically financed with high levels of debt.

- Aircraft are exposed to technological risks and obsolescence, however, there is a clear line of sight for new aircraft design and technology and very long lead times which allows this to be managed.

- The Cape Town Treaty is an internationally recognised regulation governing transactions involving movable property. The treaty covers registration of contracts for sale, security interests, leases and conditional sales contracts as well as various legal remedies for default in financing agreements, including repossession and the effect of particular states’ bankruptcy laws.
Despite a large number of different aircraft types, they are a homogenous asset with regards to their key physical characteristics and use/purpose.

Commercial aircraft can be broadly categorised by size, as either narrow body, wide body or regional jet aircraft. Narrow body aircraft are smaller and have a single aisle and will typically have a short to medium range utilisation. In contrast, wide body aircraft are larger with twin-aisles and have a medium to long-range utilisation. Regional jet aircraft represent a small sub-set of smaller narrow-body aircraft with a shorter range - thus not allowing for transatlantic or transcontinental flight. Narrow body aircraft are cheaper than wide body aircraft (up to US$50mn for a narrow body to over US$200mn for some types of wide body aircraft).

Due to the higher production rates and higher demand from operators for short and medium range travel, narrow body aircraft make up approximately 75% of all commercial passenger aircraft in operation.

A further distinction can be found between passenger and freighter aircraft. With an economic life of approximately 25-years, older out-of-production, wide body passenger aircraft have often been converted to freighter usage. However, some in-production new generation aircraft (such as the Boeing 777-200LRF) are specifically built for freighter use.

Further, passenger aircraft can be also broadly separated into in-production and out-of-production aircraft. In production aircraft are typically the newer generation production series that are more technically advanced and fuel-efficient than the older models. These newer generation aircraft - such as Boeing’s 737-800NG (Next Generation series) are much more fuel efficient that older series and will typically have much higher operator demand and a much wider operator base globally.

Aircraft can be stored for a short period of time (while airlines are taking delivery of an aircraft or leasing companies shopping around for a new customer) or over much longer periods (retiring older aircraft that might either be eventually converted to cargo or scrapped altogether).

The relevant statistics for some of the more popular aircraft types are shown in the tables below.

<table>
<thead>
<tr>
<th>BOEING 737-800 (NARROW BODY)</th>
<th>BOEING 777-300ER (WIDE BODY)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>KEY STATISTICS</strong></td>
<td><strong>KEY STATISTICS</strong></td>
</tr>
<tr>
<td>Seats</td>
<td>Seats</td>
</tr>
<tr>
<td>160-189</td>
<td>365-550</td>
</tr>
<tr>
<td>Range</td>
<td>Range</td>
</tr>
<tr>
<td>Short</td>
<td>Long</td>
</tr>
<tr>
<td>Current Fleet</td>
<td>Current Fleet</td>
</tr>
<tr>
<td>2,806</td>
<td>389</td>
</tr>
<tr>
<td>In Service</td>
<td>In Service</td>
</tr>
<tr>
<td>2,781</td>
<td>389</td>
</tr>
<tr>
<td>In Storage</td>
<td>In Storage</td>
</tr>
<tr>
<td>25</td>
<td>0</td>
</tr>
<tr>
<td>% Stored</td>
<td>% Stored</td>
</tr>
<tr>
<td>0.9%</td>
<td>0%</td>
</tr>
<tr>
<td>On Order</td>
<td>On Order</td>
</tr>
<tr>
<td>1,334</td>
<td>297</td>
</tr>
<tr>
<td>Average Age</td>
<td>Average Age</td>
</tr>
<tr>
<td>6.2</td>
<td>4.1</td>
</tr>
</tbody>
</table>

Source: Ascend Advisory (Q1, 2013)
INDUSTRY AND THE KEY PLAYERS

Aviation is one of the largest sectors in the world economy. On a global scale the sector employs over 56mn people including in related tourism industries; its global economic impact is estimated at US$2.2tn\(^1\).

Global economic growth is the key driver of air travel, which in turn drives the demand for aircraft. As a general rule, 60-80% of air travel demand can be attributed to economic activity. Over the last 40 years Airbus have estimated the income elasticity of passenger air traffic to be around +1.3 globally, whilst Ascend’s estimate of income elasticity is closer to 2 - meaning that if world GDP increases by 1% then air traffic is expected to increase by between 1.3% and 2%. Furthermore, over the past 40 years as demand for air travel has grown at a compounded annual growth rate of 6%, the global aircraft fleet has grown at a similar 5%. In fact, there have only been 3 years with negative traffic growth in the last 40 years (1991, 2001 and 2009).

AIR TRAFFIC IS CORRELATED TO THE ECONOMY

World real GDP (left axis) vs RPK traffic (right axis) growth

The industry is highly cyclical with an average cycle ranging between 6-10 years. Triggers of the cycle have changed over time. Pre 1980, they were mainly related to economic activity or war, while after 1980 regional developments and the emergence of the low cost model (LCC - low cost carriers) post US deregulation started to exert a greater impact on the cycle. While the industry remains subject to shocks (war, terrorism, oil price spikes, financial collapse), the sector has proved to be highly resilient and has been adapting over time through rationalisation, consolidation, alliances, etc.

\(^1\) Source: Airbus: Global Market Forecast 2012 - 2031
OPPORTUNITY SET / EXPECTED GROWTH

The strength of the global airline industry is highly dependant on the underlying strength across the global economy, with structural drivers/changes providing an added boost to future growth. The two main structural factors that impact airline traffic growth and demand for aircraft are growth in emerging markets and the aircraft replacement cycle.

In their latest Market Outlook both Boeing and Airbus have provided optimistic forecasts for air traffic growth over the next 20 years. Boeing has forecast growth for the world economy of 3.2%, while projecting growth in passenger traffic of 5% and growth in cargo traffic of 5.2%.

According to Airbus, world traffic will grow at a 4.7% rate over the next 20 years and air traffic will double in the next 15 years.

WORLD ANNUAL RPK* (trillion)

Source: Global Market Forecast 2012-2031

*RPK = Revenue Passenger Kilometres
Commercial aircraft provide essential infrastructure links in many of the world’s fastest-growing economies and are a key component of economic growth. The growing middle class across global emerging markets will drive travel demand, especially in Asia. With their large population, China and India in particular are expected to grow into significant aviation markets. For example, Boeing recently raised its 20-year forecast for commercial aircraft demand in China by 15% to 5,000 aircraft with a value of $600 billion by 2030 versus its prior forecast for 4,330 aircraft with a value of $480 billion. The rationale for the change is greater-than-expected demand for air travel primarily due to rising wage growth. As a result of these trends Airbus has projected that traffic in emerging markets will represent 68% of all traffic in 2031 compared to 55% today.

The favourable growth forecasts for global passenger demand are expected to translate into strong demand for aircraft.

Growth in aircraft demand in developed markets will be driven mainly by the airline industry restructuring as well as an ongoing operational requirement to replace the global aircraft pool with more fuel efficient aircraft. For instance, American Airlines has recently ordered 460 narrow body aircraft (plus options for an additional 465 aircraft) from both Airbus and Boeing.

Based on forecasts by Boeing and Airbus, around 30,000 commercial jets will be delivered over the next 20 years to meet the demands of growth and fleet replacement, requiring $4.5 trillion of financing. This essentially means that the global commercial aircraft fleet will more than double over the next twenty years.

FLEET SIZE OF PASSENGER AIRCRAFT ABOVE 100 SEATS

![Fleet size diagram](image)

Due to the continued growth of LCCs, the biggest growth segment will be single aisle fleets accounting for more than two-thirds of orders.
KEY PLAYERS

Manufacturers: Production of aircraft is tightly controlled and highly regulated. Two main manufacturers, Boeing and Airbus account for 80% of the supply of commercial aircraft with smaller manufacturers such as Embraer and Bombardier predominately focussed on regional jets, which are considered a separate class of aircraft. Aircraft production is highly predictable: the aircraft are manufactured to order - the orders are typically placed up to four or more years in advance with the buyer depositing payments (pre-delivery payments) to secure delivery.

Given the expected growth/forecasts, there are limited or no delivery slots for several years for the most sought after aircraft (Airbus A320s and A330s; Boeing 737NGs and Boeing 777s and 787s). Current annual production at Airbus and Boeing are on the rise starting from about 800 aircraft during the past few years to 1,000 and possibly higher in the 2013 - 2015 timeframe as new factories come on-line. Some analysts have predicted that based on the long-term growth rate of air travel demand combined with fleet replacement, the annual need for aircraft in coming years will be closer to 1,500. Given this, it is possible that the global aviation sector could experience a meaningful aircraft deficit in the latter part of the decade.

Airlines/Operators: There are more than a thousand airlines in the world. However the majority of these are regional airlines with a fleet size of only a few aircraft. The universe of airlines with 10 or more commercial aircraft is closer to 300 and range right the way up to Delta Airlines, the largest airline operator in the world with a fleet of 600 aircraft.

Historically, airlines have been amongst the least profitable of the aviation sub-sectors; the IATA analysis of the Value Chain Profitability has found that out of 12 subsectors, airlines have the lowest ROIC and the highest volatility.

COMPARISONS OF AIRLINE AND OTHER AVIATION SECTOR RETURNS AND VOLATILITY

ROIC: Return On Invested Capital

Source: IATA Economic Briefing No. 4: Value Chain Profitability June 2006

*CRS = Computer Reservation Systems
The last decade has been a tough one for the airline industry due to a number of unusual external events (SARS, swine flu outbreaks and natural disasters) in addition to excess capacity, intense competition and the rise of low cost carriers, all of which have contributed to lower returns. Airlines have historically been operated as utilities with inefficient cost bases. Deregulation has meant these deficiencies have been exposed and airlines have been forced, often through a painful process, to make their businesses more efficient. Financial performance has also been adversely impacted by the economic downturn, increases in regulatory costs and fuel price volatility. As a result, at various points airlines globally have incurred significant losses with many losing equity and having weakened balance sheets (however it is noted that in June 2013 IATA increased its airline profitability forecast for 2013 to $7.6 billion).

With continued pressure on cash flows due to high fuel prices, relatively thin capital structures and continued competition, many airlines are facing major challenges in finding financing at a competitive rate for aircraft on order.

Industry analysts expect the annual value of new deliveries to surpass $US100bn for the first time in 2013. Even taking into account significant discounts to list prices that are standard within the industry, market participants estimate the funding cost of the current order backlog is still likely to be in the order of $US700bn; with an order backlog or around 7-8 years.

FINANCING SOURCES

The main funding sources for aircraft purchases have traditionally been cash, capital markets, bank debt and ECA (Export Credit agencies guarantees). Another less significant source has been manufacturer provided finance. In recent years, many of these traditional sources of funding have been constrained by market and sector issues or face structural changes, thus impacting the cost and access to financing.

2011 - 2013 INDUSTRY DELIVERY FINANCING

Source: Boeing: Aircraft Finance Market
Cash and equity financing by airlines was one of the main ways of financing aircraft a couple of decades ago - when airlines predominantly owned their aircraft outright. This source of capital has significantly reduced over the years, particularly with the growth in operating leases as a key source of financing. Equity financing for aircraft has changed as airlines are becoming more focused on maintaining reasonable cash buffers to cover normal operations and allow for unusual situations. As such, cash and equity is increasingly employed by operating lessors - drawing on capital channelled either via the lessor’s parent (such as a bank or insurer) or via other third-party private/institutional capital.

Commercial Bank debt has historically been one of the main sources for funding aircraft purchases, accounting for 25% of the overall aircraft finance; European banks in particular have played the major role in aircraft financing largely providing senior debt and pre-delivery payment financing.

Post the 2008-09 global financial crisis, when bank financing was more scarce, Export Credit Agency (ECA)2 guaranteed financing increased. With ECA guarantees, banks were seen to be more willing to provide debt at more competitive terms.

The cost of financing through recent guarantees has historically been lower than commercially available bank debt. With the change in regulation3 the cost is likely to increase from 2013 as premiums will be more aligned with market rates.

Capital markets financing has been more challenging in recent years, however, the market is evolving with an issuance of new and existing capital market products (bonds) such as US Ex-Im Bank-guaranteed bonds, Enhanced Equipment Trust Certificates (EETC), and ABS.

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2 Historically, the Export Credit Agencies of the key airframe and engine manufacturing countries, such as the US, UK, Germany, France, Canada and Brazil, have recognised the importance of aircraft manufacturing to the national economies so supported the export of their aircraft by offering guarantees to cover the losses of commercial banks that were lending to relatively risky airlines

3 ASU - implementation of the New Aircraft Sector Understanding
LEASING COMPANIES

In the past ten to twenty years leasing companies have been steadily building up a significant market presence through financing not only new deliveries but also through purchase and lease-back transactions. As a result their market share has increased to close to 40% of the total number of commercial aircraft in operation globally. In order to finance the purchase of an aircraft, a leasing company would typically borrow up to 75% of the aircraft’s base value. Residual value risk rests with the lessor.

The aircraft leasing industry represents over 150 aircraft lessors with an estimated asset value of about $140bn based on current market values of aircraft. The industry is fairly fragmented with the 10 largest players accounting for just under 70% ($100 billion) of the industry’s asset base and about 60% of the total number of units. Two major companies dominate this sector; GE Capital Aviation Services (GECAS) and International Lease Finance Corporation (ILFC) each with fleets in excess of 1,000 aircraft and accounting for 34% of the global aircraft fleet (by number) between them as of May 2012. There are no clear trends of consolidation as yet; on the contrary, it seems that the sector has become ever more fragmented in recent years, with a growing number of new leasing companies entering the sector and building up portfolios relatively quickly.

150 aircraft lessors
with an estimated value of assets of about
$140bn
based on current market values of aircraft
Leasing is one of the most profitable sectors in the Aviation industry (as measured by the ROIC) and as such it is often preferred by investors and lenders due to the risk/reward profile.

AIRCRAFT PORTFOLIO INVESTMENT VS AIRLINE PERFORMANCE

Leasing companies are expected to play a key role in financing aircraft deliveries in the future as they become better placed to attract new investment, particularly from banks who will continue to see the diversification benefits in financing lessors that have a strong mix of airlines and aircraft types in their portfolios. Based on estimates by Ascend, operating leasing will account for 50% of the overall market after 2020.
GROWTH IN OPERATING LEASING

17 Leased (0.5%) 100 Leased (1.7%) 1,343 Leased (14.7%) 3,715 Leased (24.7%) 7,943 Leased (36.5%)
2020 Forecast Over 50% Leased

Source: Ascend

There are a number of reasons why operating leasing is becoming more attractive to airlines...

Greater financial flexibility
Leasing requires less capital investment, allowing airlines to invest capital in their operating business rather than deploying significant amounts into their fleets.

Greater fleet flexibility
Carriers can plan fleet changes/transitions more easily than if they owned the equipment and therefore had to manage their own residual value risk.

Access to attractive delivery slots
Given many production slots are sold out for a number of years, airlines seeking fleet growth can access lessors delivery slots.

Availability of capital
Lessors can sometimes access more and relatively cheaper capital than airlines, particularly newer airlines or those facing competition/business pressures.

Avoid pre-delivery payments
Where the lessor orders the aircraft directly from the manufacturer, the airline can avoid pre-delivery payments (PDPs) - PDP financing decreases liquidity for several years without increasing revenue.

Zero residual value risk
This risk is transferred to lessors, the owners of the planes.

Growth in Low Cost Carriers (LCC’s)
The popularity of the LLC model across the world has also boosted demand for operating leases, as most start-up operators would rather lease than buy aircraft given the significant capital commitment. The ability to fly new aircraft helps build customer awareness, manage maintenance costs and subsequently gain market share.
As at July 2013, the major aircraft manufacturers had a combined order backlog of approximately ten thousand aircraft with scheduled deliveries stretching over the next eight years or so. Assuming that 75% of the estimated $700+ billion funding cost will be debt-financed, the remaining 25%, or roughly US$175bn, represents the equity required to close the gap. This is a significant commitment relative to the industry’s earnings power. Based on recent trends it is very likely that aircraft lessors will assume a large piece of the projected order book (circa 40% of the estimated new deliveries). This will be a significant demand on the capital of aircraft lessors and will require further capital from existing lessors as well as new entrants.

Equity investors from the private equity space have been active during the recent (2009/10) cycle inflection. Additional support has come from institutional investors such as pension funds, insurance companies and banks who are becoming significant participants in the market (e.g. Bank of China, Standard Chartered, Wells Fargo, SMBC, Mitsubishi UFJ) and are likely to remain heavily engaged in the sector. As a result, we expect that the investor base will continue to broaden in the future.

In terms of investors’ access through public markets, there are only 4 main operating lessors that are listed, all on NYSE. Their combined market capitalisation is currently only $6.5 billion as at June 2013.

There are also a number of financial and tax-based structures that cater for the specific needs of particular investor groups; a small number of managed funds for high yield investors; and a number of managed asset backed securitisation (“ABS”) structures that offer passive participation in pools of leased assets.

10,000 AIRCRAFT ON ORDER $700 billion IN VALUE 75% OF THIS WILL BE DEBT FINANCED

$175 billion EQUITY REQUIREMENT
VALUATION / LIQUIDITY

Aircraft trading volumes are significantly lower than comparable listed asset classes. The industry is not very transparent in the way that trades are reported; trading data is relatively rare and hence extraneous effects can have pronounced effects on valuation.

The table below shows annual transaction volumes for some of the more popular aircraft across a number of sources (Capital Markets, Operating Lease (sale/lease back), ECA/EXIM, PDP, Finance Lease, Purchase, Purchase (Lease attached), Loan/Finance/Refinance, Tax Lease).

Smaller, less expensive narrow body aircraft (such as the 737-800 and A320-200) can be seen to have a much higher turnover than wide body aircraft such as A330s and 777s.

ANNUAL TRANSACTION VOLUME
The market relies upon valuations as a proxy for price and in periods where values and prices depart from one another considerably, liquidity is likely to be impaired. The biggest error occurs when the market is in flux and very little transaction data is available - usually for new large wide body aircraft. Further, given the cyclical nature of the industry, asset trading activity and value realisation is closely aligned to the different phases of the industry cycle.

Despite the lower volumes and the issues with appraised based valuation, there is enough empirical evidence to establish that the value of specific types of aircraft (such as a 737NG or A320) is closely correlated to its age and the stage of the industry cycle.

Based on analysis conducted by Avolon, one of the well established lessors, 2/3rds of an aircraft’s underlying value retention is directly correlated to the age of the asset. The remaining 1/3rd of value retention is linked to an asset’s remaining economic life and the forecast returns it will generate over this period. From an accounting standpoint this can be benchmarked by calculating the Net Present Value of the cash flows over the remainder of the aircraft’s economic life, making appropriate assumptions around lease terms, lease rates, default probabilities, transition costs, etc.

When valuing aircraft the stage of the economic/industry cycle needs to be taken into account as there is a consistent temporal correlation between value movements across all aircraft, which results in values rising and falling broadly in phase. This can be shown in the chart below that shows the value movement (current market value vs base value) of different aircraft through the cycle.

![Current Market Value as a % of Base Value](source: Ascend and Deutsche Bank estimates)
Below we outline some basic definitions used to describe the values of aircraft. These definitions are set by ISTAT (the International Society of Transport Aircraft Trading), an industry body representing the interests of aircraft owners, appraisers and traders.

**Base Value** is the appraiser’s opinion of the underlying economic value of an aircraft in an open, unrestricted, stable market environment with a reasonable balance of supply and demand, and assumes full consideration of its “highest and best use.”

An aircraft’s base value is founded in the historical trend of values and in the projection of value trends and presumes an arm’s-length, cash transaction between willing, able and knowledgeable parties, acting prudently, with an absence of duress and with a reasonable period of time available for marketing.

In most cases, the base value of an aircraft assumes its physical condition is average for an aircraft of its type and age, and its maintenance time status is at mid-life, mid-time (or benefiting from an above-average maintenance status if it is new or nearly new).

The decline of base value is generally predictable, at 4-9% per year, and is faster as the aircraft ages. Hence, generally an aircraft will be worth 70% of its beginning value after 5 years, 50% after 10 years, 35% after 15 years and approximately 15% at 25 years; the end of its useful life.

**Market Value** (or Current Market Value) is the appraiser’s opinion of the most likely trading price that may be generated for an aircraft under the market circumstances that are perceived to exist at the time in question.

Market value assumes that the aircraft is valued for its highest, best use, that the parties to the hypothetical sale transaction are willing, able, prudent and knowledgeable, and under no unusual pressure for a prompt sale, and that the transaction would be negotiated in an open and unrestricted market on an arm’s-length basis, for cash or equivalent consideration, and given an adequate amount of time for effective exposure to prospective buyers.

**Securitized Value** or **Lease-Encumbered Value** is the appraiser’s opinion of the value of an aircraft, under lease, given a specified lease payment stream (rents and term), an estimated future residual value at lease termination, and an appropriate discount rate.

Source: ISTAT International Appraisers’ Program, 11th May 2008
Base value is the most widely used term to describe an aircraft’s underlying, intrinsic value and it is a
nominal starting value to which adjustments may be applied to determine an actual value i.e. before
any impact resulting from prevailing market conditions. It is frequently applied to a “standard” aircraft
specification and configuration rather than to a specific aircraft or serial number. It refers to a somewhat
“idealised aircraft” and market combination, as in reality an aircraft rarely sees base market conditions.

The actual current market value of an aircraft is typically cyclical around base value with the amplitude
of this volatility varying depending on the aircraft type and its relative liquidity. The relative liquidity of
the aircraft and its attractiveness to airlines and investors is determined by a number of factors: type
(narrow body are more liquid than wide body), fuel efficiency (new generation are more liquid than the
old generation aeroplanes), installed customer base, in production/out of production aircraft (the former
more liquid that the latter), being part of a family of airplanes, etc.

An important additional requirement when valuing an aircraft asset is a Maintenance-Adjusted Value
which refers to an aircraft’s return conditions. The return conditions can be defined as follows:

- **Full life**: assumes that the key maintenance components are fresh from overhaul replacement or
cash is available to pay for the necessary work to put an aircraft in this condition.

- **Half Life**: assumes that the maintenance conditions for each of the main value components of an
asset are exactly mid-way between replacement and overhaul.

- **Zero life**: assumes all limited life components need overhaul or replacement.

The majority of leases written today, at least for young aircraft, include return conditions that relate to full
life rather than the historically more traditional half-life status.

To find the value of an aircraft most participants in the industry rely heavily on professional aircraft
appraisers. There are a handful of market leading appraisers and based on their capabilities, their risk
assessments and the underlying assumptions, the appraised values can vary significantly. Further, there
may be a strong variance between appraiser’s opinions and their reaction to a dynamic market. It is
important to understand that their output will always be a blend of art and science which is not dissimilar
to other asset classes that rely on appraised valuations.

The variations are usually quite narrow for Base Values of in-production narrow body aircraft. However,
the divergence is generally greater for wide body or for less liquid aircraft and increases with the
forecast horizon.

In addition to market and base value, appraisers may also provide “Soft” and “Distressed”
valuations which are considered extreme or severe allowing market participants to determine
“worst case outcomes”.

BASE VALUE IS THE MOST WIDELY USED TERM TO DESCRIBE AN AIRCRAFT’S UNDERLYING, INTRINSIC VALUE.
1.2. INFRASTRUCTURE

Definition and types of assets

The infrastructure sector is heterogeneous covering a diverse range of assets. Most of them typically display the following physical/economic characteristics:

• Hard, immobile assets with long economically useful lives; the economic life of most infrastructure assets being well over 30 years.

• Large scale assets with large upfront capital requirement - these can vary significantly depending on the asset, but can go up to several billion dollars for airports, ports and highways. A large majority of infrastructure assets require capex worth several hundred million dollars.

• Assets provide essential services - there is low elasticity of demand for its services.

• Infrastructure businesses tend to be viewed favourably and are even supported by governments/regulators - they operate as natural monopolies and/or have significant barriers to entry.

• They are local in their recognition - the regulatory regimes vary significantly for different types of assets and across the regions/geographies.

• Assets are difficult to replicate and they have low bypass risk.

• Assets have limited technological or obsolescence risk.

• Operating assets can generate predictable cash yield, with an element of inflation linkage.

• The scale of assets and relatively stable cash flows means that infrastructure businesses can accommodate higher levels of debt compared to other businesses.

• With large fixed cost base and low operating cost these assets/businesses have high operating leverage.

Types of users, revenue models and the regulatory regime all significantly impact the economics and the risk profile of the specific infrastructure asset/businesses.
Below we provide a summary of the different types of infrastructure assets using generally accepted classifications:

Classification by revenue model and regulated regime:
- *Throughput Assets/Economic Infrastructure* are assets for which users typically pay a fee and are subject to user demand risk. Examples are roads and airports.
- *Regulated Utility Assets* provide essential services such as power and water. Prices and terms are determined by a regulating body that sets a “fair” return. Examples of this type of asset include gas/electricity and water distribution.
- *Contracted Utility Assets* tend to be privately held and are often operated via a long-term contract with a government or private entity. Examples of this type of asset include gas pipelines and power generators.
- *Social Assets* are typically paid for by a government entity which enters into an “availability payment” contract with a private sector owner operator. Examples of this type of asset include schools, hospitals, jails and courthouses.

Classification by stage of development:
- *Greenfield* (new development) - are start-up projects that initially require the involvement and participation of many parties, e.g., design / architecture, construction, financing, and operational teams as the project develops;
- *Brownfield* (existing assets) - are generally investments in developed/operating infrastructure assets with stabilised cash flows.

Some projects may contain elements of both.

Classification by geography

Given the local nature of infrastructure assets, infrastructure can also be classified based on geography.
- *Emerging markets* are typically deemed to have a higher risk due to the lack of transparency and political instability that can undermine contractual rights. Further, regulatory regimes are less developed.
- Infrastructure assets in *Developed countries (OECD countries)* are considered to be relatively lower risk for the same reasons.
INDUSTRY AND KEY PLAYERS

As a provider of essential services, the infrastructure sector is relatively defensive; i.e. it is less susceptible to fluctuations in economic cycles.

This is illustrated in the charts below, showing a stability of infrastructure companies’ earnings and dividends relative to the broader equity market.

**INFRASTRUCTURE EPS PERFORMANCE**

Source: Bloomberg, CFSGAM  
12M trailing, consensus to Dec-2012

**INFRASTRUCTURE DPS PERFORMANCE**

Source: Bloomberg, CFSGAM  
12M trailing, consensus to Dec-2012
Another attractive feature of most infrastructure assets is that cash flows tend to be linked to inflation, either directly through concession contracts and regulatory frameworks or indirectly through pricing mechanisms. While it is difficult to prove a strong link between revenues of infrastructure assets and prices in low inflation environments, the assets seem to provide an inflation hedge in times of high inflation.

Infrastructure assets are owned by governments, held privately by the corporate sector or publicly owned by investors. It is the involvement of regulators and/or the government that makes this sector asset class different to the others.

**Regulators / Government**

Because infrastructure businesses provide essential services to the broad public, it is necessary that political, regulatory and financial frameworks are well established, understood and generally trusted by market participants. One of the key roles of the regulator is to ensure that asset owners do not use the natural monopoly position to achieve overly inflated returns at the expense of consumers, while at the same time encouraging efficient investment. By controlling the returns to asset owners, the regulator can also control the pricing regime.

There are significant differences in the maturity and development of regulatory regimes across the regions/countries. While the UK and Australia have proven stable legal and regulatory environment, emerging markets generally lag developed nations in terms of the perceived regulatory risk to investors.

**Financiers**

The source of financing for infrastructure asset varies significantly across sectors and countries. Some sectors are dominated by government spending, others by overseas development aid (ODA), or private investors.

Traditionally, governments have provided significant equity financing with banks and capital markets supplying debt financing. In recent years, the equity financing of infrastructure companies and assets sourced from the private sectors has gained significant momentum. This trend will most likely continue, leading to increasing private ownership of infrastructure assets thus resulting in further breadth and depth to the sector.

Specifically, infrastructure investments have been one of the fastest growing asset classes for pension funds and sovereign wealth funds. According to Preqin, there are currently 144 unlisted infrastructure funds on the road (Q2 2013), targeting an aggregate $93bn in institutional capital.
OPPORTUNITY SET / EXPECTED GROWTH

Globally, the existing investment opportunity set for infrastructure investments can be defined by using estimates of the total value of all operational infrastructure assets as well as the value of the assets that can be accessed through the listed equity market. These two provide significantly different results, however, both measures indicate that the market is very large and generally comparable to other listed asset classes.

Based on the research conducted by RREEF in 2008 the existing stock of infrastructure assets is estimated to be approximately US$20.5 trillion. This compares to the World Bank’s estimates of global GDP of around US$58 trillion in 2009.

The UBS Global Infrastructure and Utilities Index (the listed equity index) values the investable opportunity set at above US$1.5tn at the beginning of 2013.

There are a number of macro drivers underpinning the expectations of strong growth of private investments in infrastructure assets over the next couple of decades. These drivers are: fiscal pressures and the governments around the world looking to de-lever their balance sheets; rapid urbanisation in emerging markets, transition to low carbon economies; sustainability and natural resource scarcity; diversification of risk for institutional investors, etc.

Based on the projections of the OECD’s ‘Infrastructure to 2030’, the most comprehensive and detailed study into future global infrastructure requirements study, the capital expenditure requirements for telecommunications, road, rail, electricity transmission and distribution would approximate to a total cumulative expenditure of US$53 trillion till 2030. If electricity generation and energy-related infrastructure investments are also included, this estimate rises to approximately 3.5% p.a. of global GDP or total cumulative expenditure of US$71 trillion. As such, the “future pipeline” of infrastructure opportunities is likely to be very large, although it is difficult to estimate what proportion of this “future pipeline” will be investable.

While the bulk of new infrastructure investments in emerging markets will constitute new assets, in the developed markets a large portion of these investments will be directed towards maintenance, repairs, retro-fitting etc.
VALUATION / LIQUIDITY

By its nature, infrastructure assets are highly illiquid, although the ability to exit infrastructure investments depends on the investment structure. The scale of the assets and the involvement of regulator/government means that there are typically long delays in the purchase and sale process.

The chart below shows a number of deals made by unlisted infrastructure managers in the last five years as reported by Preqin.

NUMBER OF DEALS MADE BY UNLISTED INFRASTRUCTURE FUND MANAGERS 2008 - 2013

Valuation approaches differ depending on the risk profile of the assets. Core infrastructure assets with stabilised cash flows are typically valued using a discounted cash flow (“DCF”) approach. The long duration of infrastructure assets means that DCF based valuation measures are highly susceptible to relatively small changes in the assumptions used (such as interest rates, terminal value and projected growth rates). Terminal values are particularly sensitive and are also highly subjective given that they may be based on public market equivalents.

Assets are typically valued for acquisition and sale purpose as well as for performance management purposes on a regular basis (quarterly and semi-annually). While the use of different valuers will likely lead to differences in valuation, these are not as large as is the case for aircraft, because of their lower sensitivity to market forces.
1.3. PROPERTY

Definition and Types of Assets

Property covers heterogeneous assets displaying the following characteristics:

- They are hard, immobile assets with long economically useful lives - the economic life of most property assets is well over 30 years.

- They are local in their recognition due to the importance of location and their immobile nature.

- Assets may be difficult to replicate as there may be significant regulations/legal restrictions at a national/local level.

- They require large upfront capital requirement - depending on the asset, the upfront outlay can range from several millions to a couple of billions.

- Their large scale means they use substantial amount of debt financing.

- Stabilised properties provide stable income stream that grows with inflation.

- Rents are underpinned by long term contracts; these can range between 6 months to 10 years.

- The assets have limited technological or obsolescence risk.
Based on its purpose/end user, real estate assets can be broken down into the following core groups:

**Residential Real Estate** usually refers exclusively to single-family housing; and

**Commercial Real Estate** almost always involves a landlord and tenant and always has a business purpose, versus personal use. Commercial real estate can be further grouped into:

- Retail - shopping centres, malls, etc., property that is used by a business, which facilitates daily shopping by individuals.
- Industrial - manufacturing plants, warehouses, etc., used by businesses for production and storage of goods.
- Multi-family - apartments, usually refers to a residential property with more than 4 units.
- Office - office buildings, from large urban towers to suburban office parks.
- Hospitality - hotels and resorts.

**Land** typically includes “raw” land (without any buildings or “improvements”) that is either in a continuously undeveloped state (agricultural property) or is pre-development.

Within these core groups, however, there are smaller, niche areas of real estate For example: Senior and student housing, multi-family, self storage, industrial, youth hostels, hospitality.

Other than purely raw land, real estate must be “created,” and therefore assets can fall along a continuum:

**Entitlement property** is in the process of being planned and approved. No construction has yet occurred.

**Development property** has been approved and is being prepared for construction.

**Construction property** “goes vertical,” structures (buildings or houses) are built and prepared for occupancy.

**Lease-up** (for commercial property) - buildings are largely completed but not fully occupied.

**Stabilised** for commercial property, property is fully leased and operational. For residential housing

Given the local nature of property assets, real estate can also be classified based on geography.

**Emerging markets** are typically deemed to have a higher risk due to the lack of transparency and political instability that can undermine contractual/land rights.

**Developed countries** property assets (OECD countries) are considered to be relatively lower risk for the same reasons.
INDUSTRY AND KEY PLAYERS

Like all investments, real estate experiences its own cycle; this cycle is a direct result of overall economic activity (increased hiring creates greater need for housing and office, increased SP consumption etc.) and therefore tends to follow a similar cycle to the general economy. However, real estate usually lags behind the broad economic cycle due to the nature of the asset: real estate fundamentals tend to stay strong for some period in the beginning of a general economic downturn, and tend to stay weak for some period even after the economy has recovered. This is due to the fact that decisions made about real estate (building a building, signing leases, etc) are more long-term in nature and therefore decisions are made well in advance of actual construction or move-in.

Real estate assets provide some protection against inflation via the cost of construction materials and labour and through implicit or explicit rent provisions. Real estate is owned by the corporate sector, individuals, and a range of institutional investors. Acquisition of assets requires significant amounts of capital, including a substantial use of debt, which has been traditionally provided by the banks and other financial institutions and supported through the listed equity and capital markets.

Reflecting the local nature of the real estate market, the types of real estate that constitute the investment market and their financial characteristics vary from country to country. Institutional investment in commercial sectors can be found in most countries while generally speaking for the residential sector, institutional investment is less common. In the UK, institutional investment in the residential sector is very low but in the Netherlands and Switzerland, for example, it is relatively high. The US, in particular, represents a challenging region for foreign real estate investors due a US tax law that imposes income tax on foreign persons disposing of US real property interests (FIRPTA).
OPPORTUNITY SET / EXPECTED GROWTH

The key drivers of the sector’s future growth are urbanisation, the rise of the middle class in emerging markets as well as continuing re-developing/repositioning of existing properties in the developed markets in response to structural (demographics) and cyclical changes.

While it is difficult to come up with the accurate measure of the global real estate market’s size, different estimates put its value at between US$24.1 trillion and US$34.4 trillion (source: CBRE and LaSalle). The “investable universe” in global real estate, as measured by the EPRA / NAREIT Global Real Estate Index was around US$0.9 trillion by the end of 2010, while the market capitalisation of the UBS Global REIT index was over $US1tn at the beginning 2013.

VALUATION / LIQUIDITY

Similar to infrastructure, property assets are fairly illiquid featuring long delays in the purchase and sale process.

In the commercial real estate market, the insufficient amount of information available on transaction prices has led to the construction of indices based on regular valuation of a sample of properties. The price of units in unlisted funds is based on valuations and trading takes place at NAV (often with a bid/offer spread to reflect the cost of acquiring and disposing of the underlying assets).

Given the inefficiency of real estate markets, multiple approaches are generally preferred when valuing a real estate asset. In addition to DCF and market comparable methods, income generating real estate investments are often valued using a direct capitalization approach whereby a projected capitalization rate is used as investment criteria. The capitalization rate is calculated using a measure of cash flow, typically net operating income - NOI, which is defined as income (earnings) before depreciation and interest expenses. Depreciation in the tax and accounting sense is excluded from the valuation of the asset, because it does not directly affect the cash generated by the asset. To arrive at a more realistic definition, however, estimated annual maintenance expenses or capital expenditures will be included in the non-interest expenses.
Section 2 Aviation:
VALUE CREATION AND RISK EXPOSURES
2.1. AVIATION VALUE CREATION - SOURCES OF RETURN

2.1.1. AIRCRAFT LEASING

In this section we explain the economics of an operating leasing model in more detail without focusing on specific business models and approaches as these can vary significantly. We’ll also explore the critical factors for adding value and risk management.

Lessors typically source aircraft through three broad channels:

1. Purchase and leaseback from airlines
2. Purchase from other lessors
3. Direct orders placed with the manufacturer

In order to finance the purchase of an aircraft, a leasing company typically needs to borrow up to 75% of the aircraft’s base value.

As aircraft have useful lives of 25 years and beyond, the operating lessor needs to manage the aircraft throughout its life cycle. During the course of an aircraft’s life, the lessor must find ways to generate a return on the aircraft through re-leasing and eventually selling or “chopping up” the aircraft into parts.
**REVENUES**

AN AIRCRAFT LEASING COMPANY EARNs MONEY FROM:

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### Lease

**CONTRACTED CASH FLOW WITH THE LESSEES**

Terms and conditions of lease are governed by operating lease agreements. Operating leases are typically subject to “triple-net” terms / covenants, whereby the lessee is responsible for crew, maintenance, insurance, and taxes. Hence, the lessor is not taking any capex, insurance, or any other risk with the asset other than residual value risk. Generally, the lease agreements provide for a “hell-or-high water” obligation, in which the lessee must make unconditional lease payments for the term of the lease regardless of circumstances affecting the aircraft or the lessee.

The main features of operating leases are as follows:

- Operating leases are normally paid in monthly or quarterly instalments. The lease agreements can be either fixed or variable (typically based on LIBOR), with the vast majority of leases fixed and denominated in US dollars.

- The length of an aircraft lease would typically range between 5-10 years. A younger aircraft tends to have longer lease terms than an older one as the expected utilization rate of an aircraft declines as it ages. At midlife, lease term is usually 4-5 years.

- Lease income is measured using a **Lease Rate Factor (LRF)**, which is defined as \((\text{Lease Income per month}) / (\text{Aircraft Value})\).

- The lease income for an aircraft in dollar terms tends to decline as the aircraft ages while the Lease Rate Factor tends to increase. The **Lease Rate Factor** typically ranges between approximately 80bps for a new aircraft to greater than 150bps for an older aircraft (that is, 9.6% to 18% per annum). Older aircraft on higher LRFs are generally leased on shorter terms than younger aircraft on lower LRFs.

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### Sale

**EITHER SALE OR PART-OUT**

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* (Scrap Value)
In addition to the age of the aircraft, aircraft operating lease rates are affected by the following factors: type of lease; interest rates; tax considerations; terms of the lease; starting value of the aircraft; assumption of residual value of aircraft; and credit quality of the airline lessee.

**HISTORICAL LEASE RATES FOR NEW AIRCRAFT**

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</thead>
<tbody>
<tr>
<td>A320-200</td>
<td>$1,200</td>
<td>$1,200</td>
<td>$1,100</td>
<td>$1,000</td>
<td>$900</td>
<td>$900</td>
<td>$900</td>
<td>$900</td>
<td>$900</td>
<td>$900</td>
<td>$900</td>
<td>$900</td>
</tr>
<tr>
<td>737-800</td>
<td>$1,000</td>
<td>$1,000</td>
<td>$900</td>
<td>$800</td>
<td>$700</td>
<td>$700</td>
<td>$700</td>
<td>$700</td>
<td>$700</td>
<td>$700</td>
<td>$700</td>
<td>$700</td>
</tr>
<tr>
<td>A330-200</td>
<td>$800</td>
<td>$800</td>
<td>$700</td>
<td>$600</td>
<td>$500</td>
<td>$500</td>
<td>$500</td>
<td>$500</td>
<td>$500</td>
<td>$500</td>
<td>$500</td>
<td>$500</td>
</tr>
<tr>
<td>767-300ER</td>
<td>$600</td>
<td>$600</td>
<td>$500</td>
<td>$400</td>
<td>$300</td>
<td>$300</td>
<td>$300</td>
<td>$300</td>
<td>$300</td>
<td>$300</td>
<td>$300</td>
<td>$300</td>
</tr>
<tr>
<td>777-200ER</td>
<td>$400</td>
<td>$400</td>
<td>$300</td>
<td>$200</td>
<td>$100</td>
<td>$100</td>
<td>$100</td>
<td>$100</td>
<td>$100</td>
<td>$100</td>
<td>$100</td>
<td>$100</td>
</tr>
<tr>
<td>747-400</td>
<td>$200</td>
<td>$200</td>
<td>$100</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
</tbody>
</table>

Note: The last year of 747-400 production was 2005. 2006 and on represent 2005 build year

It is important to note that the chart above reflects lease rates at the date a lease is agreed, and those rates are then fixed for the lease term. As such, leases are not reset or reviewed during the lease period.

Successful aircraft lessors can generate annual unlevered gross yields on their aircraft portfolios (annual lease revenue divided by current market value or CMV of the lease assets) of 10% - 12%, before depreciation and Opex.
SALE

An aircraft may be sold more than once during its useful life, as some holders tend to favour and specialise in either younger or older aircraft. Accordingly, a portion of an investor’s return from their investment will be derived from the sale price of the aircraft. For those investors who focus on younger aircraft and therefore actively manage their portfolio within age targets, the sale price of an aircraft (known as its residual value) will be more important than for those investors who retain the aircraft through a larger part of its economic life, in which case the lease revenues will be the major factor in the overall return from the investment.

There are a number of factors that can influence the residual value of an aircraft:

- **Market-related**: these include factors such as total sales (in service and future orders), customer base (number of airlines and geographic dispersion) and the level of lessor commitment, with negative factors including the level of manufacturer support (proportion of the fleet on the manufacturer’s balance sheet) and the number of aircraft in storage.

- **Performance-related metrics**: these include the level of technology, the stage of the aircraft’s production life-cycle, its operating economics and fuel burn, family membership, mission flexibility, potential for freighter conversion and the degree of cabin and specification standardisation.

As a general rule younger aircraft hold their value to a greater extent when compared to older aircraft where there is generally greater volatility in residual values. Fuel efficiency is also a factor as younger aircraft are generally the most modern and fuel efficient and therefore are in strong demand. However this greater volatility for older aircraft can work both ways for investors as has been seen recently where residual values and lease rates have strengthened for some older aircraft as some of the newer technology has been delayed (examples being airlines retaining some of their older wide body aircraft to ensure capacity given past and continued delays in new aircraft types such as the Airbus A380, the Airbus A350 and Boeing 787 Dreamliner).
COSTS OF AIRCRAFT LEASING

The main costs within an aircraft leasing business are depreciation, interest expense and asset management fees. Depending on how the aircraft leasing business is managed, particularly on the liability side of the balance sheet, the cash in and out flows from the business should be very predictable and transparent. A typical aircraft investment, using market standard assumptions, would look as follows:

Case Study

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aircraft Purchase Price (e.g. 2013 A330-300)</td>
<td>$100m</td>
</tr>
<tr>
<td>Lease Rate Factor (LRF)</td>
<td>0.90%</td>
</tr>
<tr>
<td>Depreciation</td>
<td>3.4% p.a. straight line</td>
</tr>
<tr>
<td>Asset Management (i.e., lessor Opex)</td>
<td>1%</td>
</tr>
<tr>
<td>Lease Term</td>
<td>7 years</td>
</tr>
<tr>
<td>Cost of debt</td>
<td>5%</td>
</tr>
</tbody>
</table>
The tables below show the cash flows associated with this investment over the lease term, first on an un-levered and then on a levered basis.

Table 1: Unlevered returns

<table>
<thead>
<tr>
<th>UNLEVERED RETURNS</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Year 6</th>
<th>Year 7</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Revenue</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lease rentals</td>
<td>$10,800,000</td>
<td>$10,800,000</td>
<td>$10,800,000</td>
<td>$10,800,000</td>
<td>$10,800,000</td>
<td>$10,800,000</td>
<td>$10,800,000</td>
</tr>
<tr>
<td><strong>Expenses</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depreciation</td>
<td>-$3,400,000</td>
<td>-$3,400,000</td>
<td>-$3,400,000</td>
<td>-$3,400,000</td>
<td>-$3,400,000</td>
<td>-$3,400,000</td>
<td>-$3,400,000</td>
</tr>
<tr>
<td>Opex</td>
<td>-$1,000,000</td>
<td>-$1,000,000</td>
<td>-$1,000,000</td>
<td>-$1,000,000</td>
<td>-$1,000,000</td>
<td>-$1,000,000</td>
<td>-$1,000,000</td>
</tr>
<tr>
<td><strong>Profit</strong></td>
<td>$6,400,000</td>
<td>$6,400,000</td>
<td>$6,400,000</td>
<td>$6,400,000</td>
<td>$6,400,000</td>
<td>$6,400,000</td>
<td>$6,400,000</td>
</tr>
<tr>
<td>Unlevered ROE*</td>
<td>6.40%</td>
<td>6.63%</td>
<td>6.87%</td>
<td>7.13%</td>
<td>7.41%</td>
<td>7.71%</td>
<td>8.04%</td>
</tr>
</tbody>
</table>

Depreciation

| Opening Value    | $100,000,000 | $96,600,000 | $93,200,000 | $89,800,000 | $86,400,000 | $83,000,000 | $79,600,000 |
| Annual depreciation | -$3,400,000 | -$3,400,000 | -$3,400,000 | -$3,400,000 | -$3,400,000 | -$3,400,000 | -$3,400,000 |
| Closing Value    | $96,600,000 | $93,200,000 | $89,800,000 | $86,400,000 | $83,000,000 | $79,600,000 | $76,200,000 |

* ROE Calculated as profit divided by depreciated value of aircraft

Table 2: Levered returns

<table>
<thead>
<tr>
<th>LEVERED RETURNS</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Year 6</th>
<th>Year 7</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Revenue</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lease rentals</td>
<td>$10,800,000</td>
<td>$10,800,000</td>
<td>$10,800,000</td>
<td>$10,800,000</td>
<td>$10,800,000</td>
<td>$10,800,000</td>
<td>$10,800,000</td>
</tr>
<tr>
<td><strong>Expenses</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depreciation</td>
<td>-$3,400,000</td>
<td>-$3,400,000</td>
<td>-$3,400,000</td>
<td>-$3,400,000</td>
<td>-$3,400,000</td>
<td>-$3,400,000</td>
<td>-$3,400,000</td>
</tr>
<tr>
<td>Opex</td>
<td>-$1,000,000</td>
<td>-$1,000,000</td>
<td>-$1,000,000</td>
<td>-$1,000,000</td>
<td>-$1,000,000</td>
<td>-$1,000,000</td>
<td>-$1,000,000</td>
</tr>
<tr>
<td>Interest</td>
<td>-$3,375,000</td>
<td>-$3,222,000</td>
<td>-$3,069,000</td>
<td>-$2,916,000</td>
<td>-$2,763,000</td>
<td>-$2,610,000</td>
<td>-$2,457,000</td>
</tr>
<tr>
<td><strong>Profit</strong></td>
<td>$3,025,000</td>
<td>$3,178,000</td>
<td>$3,331,000</td>
<td>$3,484,000</td>
<td>$3,637,000</td>
<td>$3,790,000</td>
<td>$3,943,000</td>
</tr>
<tr>
<td>Levered ROE*</td>
<td>11.67%</td>
<td>12.23%</td>
<td>12.80%</td>
<td>13.37%</td>
<td>13.93%</td>
<td>14.50%</td>
<td>15.77%</td>
</tr>
</tbody>
</table>

Debt profile

| Opening debt    | $75,000,000 | $71,600,000 | $68,200,000 | $64,800,000 | $61,400,000 | $58,000,000 | $54,600,000 |
| Amortisation    | -$3,400,000 | -$3,400,000 | -$3,400,000 | -$3,400,000 | -$3,400,000 | -$3,400,000 | -$3,400,000 |
| Closing debt    | $71,600,000 | $68,200,000 | $64,800,000 | $61,400,000 | $58,000,000 | $54,600,000 | $51,200,000 |

* Calculated as Profit / Depreciated Value
The chart below shows the typical use of the lease receipts in an aircraft leasing business. This is based on the same assumptions as used in the tables to the left.

Use of Lease Receipts

- Depreciation
- Opex
- Interest cost
- Cash available to equity

Note that often the cash set aside for depreciation is used to amortise debt secured against the aircraft, ensuring an investors NAV remains constant even though the asset is depreciating.

There may be also some other incidental costs such as: remarketing, storage, repossession if lessees default, transition to new lessee and storage when the aircraft is not utilised.
SOURCES OF VALUE ADD/RISKS

Aircraft lessors can add value through the following main sources:

Timely acquisition and disposal of aircraft

The purchase price of an asset is generally one of the key determinants of the overall return achieved on the asset. An aircraft lessor can leverage this by purchasing assets in bulk directly from a manufacturer or acquiring a fleet of aircraft from a distressed seller. Given the cyclical nature of the business and the inherent uncertainty associated with the asset cycles, investors must be prepared to hold their investments over a longer term if the circumstances for an exit are not favourable.

Asset selection and portfolio fleet management

The age and type of planes acquired (narrow body, wide body) and their attractiveness (performance and market related characteristics) to potential investors can markedly impact the overall return.

Strong credit analysis

A rigorous approach to credit risk management will also help protect the asset and income stream associated with the investment, by providing on-going oversight of the aircraft operator and an early warning of any deterioration in business performance that might suggest that a default may occur.

Asset management

Aircraft are complex physical assets with strict regulations imposed on the operators. Hence, asset management is extremely important from a technical and risk perspective. Technical asset management begins at the time of asset acquisition, as potentially there is significant value to be lost or gained around the detailed specification of the aircraft. Technical input into the drafting of a lease contract is also highly value-added, as this is where the return conditions and the level of any maintenance reserves that will be paid during the term of the lease are defined. The support of a capable asset management team is important in mitigating the risks associated that arise with the passage of time - remarketing, managing defaults, technical asset management, etc.

Prudent capital structure

Lessors should ensure an appropriate capital structure for the type of assets acquired while maintaining a low financing cost and managing refinancing risk.
STRONG ASSET AND CREDIT MANAGEMENT IS REQUIRED TO ADD VALUE AND MITIGATE RISKS
2.1.2. INFRASTRUCTURE

Infrastructure equity investors are essentially business owners of infrastructure assets and are therefore entitled to the residual cash flows from these businesses.

Equity investors’ revenue from an infrastructure business are generated from:

1. Residual cash flows
2. Sale of the asset / business

REVENUES

The underlying economics of different types of infrastructure assets differ due to the pricing mechanism and the nature of the contracts/concessions underpinning these businesses. The table below illustrates the key differentiating features of each revenue model.

<table>
<thead>
<tr>
<th>Types</th>
<th>Pricing Mechanism</th>
<th>Key risk exposures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Throughput/Economic</td>
<td>User paid fee</td>
<td>Volume - patronage /some regulatory risk</td>
</tr>
<tr>
<td>Regulated</td>
<td>Prices and terms are determined by a regulatory body that attempts to set a ‘fair’ return</td>
<td>Regulatory / some volume</td>
</tr>
<tr>
<td>Contracted</td>
<td>Negotiated - Revenue terms are contracted via long term off-take agreements</td>
<td>Counterparty / volume / regulatory</td>
</tr>
<tr>
<td>Social</td>
<td>Availability payment - the concessionaire is paid a regular amount as long as the asset is available for its intended use, regardless of the actual level of use</td>
<td>Regulatory /counterparty</td>
</tr>
</tbody>
</table>
SALE OF THE ASSET / BUSINESS

Typically, infrastructure equity investors in operating/mature assets adopt a “buy and hold” strategy holding assets over the long term.

For greenfield or emerging market infrastructure assets, the difference between acquisition and sale price will determine the bulk of an equity investors’ return.
COSTS

The costs structure of infrastructure businesses can vary markedly; they all typically have large capex programs, which are funded either through cash flows from operations, additional equity or debt. For example, airports, energy pipelines and integrated utilities require significant stay-in-business capital expenditure.

Labour/variable costs generally accounts for a small portion of the cost structure and a majority of businesses have the ability to pass through commodity price risk onto the end user. Given the high capital intensity of the sector and the interest of different stakeholders, efficient use of capital is extremely important for ensuring the provision of lowest cost of service.

“Whilst the degree of financial leverage may vary across assets, it is estimated that only 20-30% of revenues are typically required for operating purposes with the balance being available for servicing capital (debt and equity).”

In addition to gearing levels, it is important to consider the structure of debt (tenure and terms), as this impacts the refinancing risk an asset is exposed to and the flexibility to invest in capital expenditure for maintenance and growth.
SOURCES OF VALUE ADD/RISKS

Given the nature of the business (essential services) and a broad range of stakeholders involved (customers, regulator), the payoff profile from the active asset management of mature infrastructure assets is asymmetric. Generally speaking, the downside risk resulting from poor asset management outweighs the potential value add.

Equity investors in infrastructure businesses can create value in two main ways:

- Optimising an existing asset both operationally and financially to achieve their potential value; and
- Growing an existing asset through further capital investment to add value.

When infrastructure assets are already mature and operational they have limited scope for further expansion. The emphasis of active management is typically on asset optimisation through operational (increasing revenues, reducing expenses) and capital structure efficiencies. Hence, the majority of the “value add” from managing mature infrastructure assets will come from operational and financial optimisation rather than asset growth. However, ultimately the magnitude of value add that can be extracted is limited.

In spite of this, assets with a growth profile offer significant potential for generating value add/ upside, mainly through growth capex aimed at meeting expected demand in the future.

KEY SOURCES OF RISK IN INFRASTRUCTURE ARE:

**Paying too much for the asset**
- Paying an unsustainable price/multiple for an infrastructure asset that may include unrealistic capex forecasts.

**High level of gearing**
- Excessive use of leverage and poorly structured debt, which is not in-line with the nature of the asset’s revenue streams or credit market risks.

**Mispricing the risk profile**
- Failing to understand the true extent of the risk exposure inherent in an asset and/or the sector to which it belongs.

**Unrealistic growth forecasts or terminal value assumptions**
- Reliance on optimistic future demand growth, cost reductions or asset terminal value assumptions to justify the targeted investment return.
2.1.3. PROPERTY

A landlord earns revenues from:

1. Rent - contracted cash flows with the tenants; and
2. Sale of the assets

RENT

Terms and conditions of rental payments are governed by lease agreements. Lease agreements vary from country to country but typically, the landlord pays for taxes, insurance and maintenance. The term of lease can range between 6 months to 10 years, but a typical lease term for commercial property is between 5 - 7 years. The lease stipulates rent increases through escalation clauses.

COSTS

The landlord pays the expenses out of the collected rents. For stabilised properties the cost structure is dominated by maintenance/property management costs. For development properties debt servicing represents a significant cost item.

SALE

Typically, investors in stabilised properties adopt a “buy and hold” strategy, holding the assets in prime location for the long term.

The value of the assets at the sale will reflect a number of key factors: expected income growth; the risk related to income growth; tenant default risk - tenancy structure; liquidity risk; management costs, etc.

In general, the bulk of ‘core’ real estate’s return comes from the ability of an asset to generate cash flow, verses appreciation (although this depends on the asset type).
SOURCES OF VALUE ADD / RISKS

Similar to infrastructure, the payoff profile from the active asset management of the stabilised real estate assets is asymmetric, with the downside risk resulting from poor asset management outweighing the potential value add.

Sources of value creation specific to property assets are the management of:

- **Structural real estate risks which are determined by the local property markets** - market depth liquidity, transparency, barriers of entry (resulting in landlord pricing power), and the availability of quality tenants and their asset structure; lease expiry profile, etc.

- **Cyclical real estate risks related to the property market cycles in various countries** - cyclical risks can be diversified away which is one of the key reasons for investing globally.

Value can be added through re-development and repositioning of the assets, developing the asset into a stabilised property, leasing up, etc.

Similar to infrastructure, value can be destroyed through overpaying for the asset and poor capital structure.
2.2. RISK CATEGORIES

In this section we summarise the risk categories for each of the asset classes based on their characteristics and the potential to add value. Infrastructure and property assets cover the full risk spectrum, ranging from relatively low risk to high risk ‘private equity like’ returns. Compared to these two asset classes, aircraft assets span a relatively narrow range of risk returns outcomes, which is a reflection of the homogenous nature of the asset class.

2.2.1. AIRCRAFT LEASING

Age is found to be one of the main factors in determining the risk profile of the returns that can be generated through aircraft leasing. Both expected return and risk are higher for older portfolios compared to younger ones. From an investment and operating lease perspective, narrow body aircraft are generally cheaper than wide body aircraft of equivalent age and will have proportionally lower nominal monthly lease payments. Combined with the higher production rates and higher demand from operators for short and medium range travel, narrow body aircraft have a broader, deeper and more liquid market than wide body aircraft. This would generally result in lower risk and lower returns for a narrow body aircraft relative to a wide body aircraft of the same age.

In production aircraft have much higher operator demand and a much wider operator base globally. This in turn supports stronger lease rates and asset values - both in terms of lower market value volatility and lower book value depreciation. In contrast, older, out of production aircraft are less in demand with a smaller global operator base. Leases and valuations will be much lower and market values will be more volatile. Consequently, out of production aircraft are riskier as opposed to in-production aircraft of the same age. However this also creates greater upside potential and thus the opportunity to achieve a higher but more volatile expected rate of return.

However, we note that the risk profiles and expected returns between the above mentioned categories are not as distinct as is the case with property and infrastructure.

The table below shows the expected returns and risk profiles for in production aircraft for their different lease cycles which essentially captures the age as the key risk factor.

<table>
<thead>
<tr>
<th>1) Risk Profile</th>
<th>Expected returns (IRRs)</th>
<th>Level of gearing</th>
<th>Return characteristics/ expected Cash Yields</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aircraft in Production</td>
<td>12-15%</td>
<td>70 - 85%</td>
<td>Mix of income (7-8%) and growth</td>
</tr>
<tr>
<td>(First/Second Lease Cycle)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aircraft in Production</td>
<td>Returns should be</td>
<td>50 - 65%</td>
<td>Focus on income (c. 9-10%) and opportunistic growth</td>
</tr>
<tr>
<td>(Third/Fourth Lease Cycle)</td>
<td>higher here</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The above returns are indicative only (US$).

While age is one of the key risk factors, as part of the construction of an aircraft portfolio there is the opportunity to design the target aircraft mix and level of gearing to achieve the desired risk/return profile.
2.2.2. INFRASTRUCTURE

Based on the asset exposures to the risk factors discussed in the previous sections (Regulatory, Economic Risks, Development stage, Geography) we define the following infrastructure categories by risk:

<table>
<thead>
<tr>
<th>2) Risk Profile</th>
<th>Expected returns (IRRs)</th>
<th>Level of gearing</th>
<th>Return characteristics/ (expected cash yields)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core/Mature (Regulated/Social)</td>
<td>8 - 12%</td>
<td>Up to 85%</td>
<td>Focus on Income/ (6%-10%)</td>
</tr>
<tr>
<td>Core Plus/Growth (Economic/Contracted)</td>
<td>10 - 15%</td>
<td>Up to 60%</td>
<td>Mix of Income and Growth/ (5%-7%)</td>
</tr>
<tr>
<td>Opportunistic (Greenfield and Emerging markets)</td>
<td>15%+</td>
<td>Less than 20%</td>
<td>Focus on Growth (nil to low)</td>
</tr>
</tbody>
</table>

The above returns are indicative only (US$).

2.2.3. PROPERTY

<table>
<thead>
<tr>
<th>3) Risk Profile</th>
<th>Expected returns (IRRs)</th>
<th>Level of gearing</th>
<th>Return characteristics/ (expected cash yields)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core (stabilised, income producing)</td>
<td>7 - 10%</td>
<td>Less than 40%</td>
<td>Focus on Income/ (6%-9%)</td>
</tr>
<tr>
<td>Value added (mix of stabilised and development/distressed)</td>
<td>10 - 15%</td>
<td>40% to 60%</td>
<td>Mix of Income plus Growth/ (5%-8%)</td>
</tr>
<tr>
<td>Opportunistic (development/distressed)</td>
<td>16%+</td>
<td>More than 60%</td>
<td>Focus on Growth (nil to low)</td>
</tr>
</tbody>
</table>

The above returns are indicative only (US$).
2.3. RISKS EXPOSURES

2.3.1. COMMON RISK FACTORS

In this section we show the sensitivity of the three asset classes to both common risk factors and idiosyncratic risk factors. The former group covers market risks, economic and structural factors. The latter group deals with asset specific risks. The sensitivity to these factors is difficult to quantify and hence we explore them largely qualitatively by grading them between low (low sensitivity to the factor) to high. This framework can highlight differences and common features of the asset classes and assist with the assets' positioning within a portfolio.

<table>
<thead>
<tr>
<th>Risk Factors</th>
<th>Aircraft Leasing</th>
<th>Infrastructure</th>
<th>Property</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equity</td>
<td>Low - Medium</td>
<td>Low (Core) - High</td>
<td>Low (Core) to High (Opportunistic)</td>
</tr>
<tr>
<td>Term premia/ Duration</td>
<td>Low</td>
<td>Medium - High</td>
<td>Medium - High</td>
</tr>
<tr>
<td>Credit</td>
<td>High</td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td>Illiquidity premium</td>
<td>Medium</td>
<td>High</td>
<td>Medium - High</td>
</tr>
</tbody>
</table>

Due to the wasting nature of aircraft and the residual value risk, for aircraft we assign a low to medium rating for the equity risk premium sensitivity relative to less risky core infrastructure and property assets. Opportunistic infrastructure and property, however, have a higher sensitivity to this factor than aircraft. Aircraft also have the highest credit risk because of the exposure to one sector - airlines. In case of property the credit exposure is more diversified. As aircraft are more liquid compared to infrastructure and property, we have assigned a lower illiquidity rating (medium) vs infrastructure and property (high). Aircraft assets also have a lower sensitivity to duration relative to infrastructure and property.

ECONOMIC / FUNDAMENTAL RISKS:

<table>
<thead>
<tr>
<th>Risk Factors</th>
<th>Aircraft Leasing</th>
<th>Infrastructure</th>
<th>Property</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulatory/political</td>
<td>Medium (indirect)</td>
<td>Medium- High</td>
<td>Low to High</td>
</tr>
<tr>
<td>Growth</td>
<td>High</td>
<td>Low</td>
<td>Low to Medium</td>
</tr>
<tr>
<td>Oil Prices</td>
<td>Medium - High</td>
<td>Low to Medium</td>
<td>Low</td>
</tr>
<tr>
<td>Inflation</td>
<td>Low</td>
<td>Medium to High</td>
<td>High</td>
</tr>
<tr>
<td>Leverage</td>
<td>High</td>
<td>High for Core - Low</td>
<td>Low for Core - High for Opportunistic</td>
</tr>
<tr>
<td>Technology risk</td>
<td>Medium</td>
<td>Low</td>
<td>Low</td>
</tr>
</tbody>
</table>
On a relative basis, aircraft leasing shows a high sensitivity to growth and oil prices and low sensitivity to inflation. Its exposure to regulatory risk is indirect through the link to airlines and aircraft manufacturers and hence we have graded it as medium.

For property and infrastructure, the sensitivity to leverage depends on the type of asset. However, aircraft leasing typically employs a higher level of leverage. Aircraft leasing also shows a higher sensitivity to technology risk (graded medium) compared to the other two asset classes. We note that the technology risk for aircraft is evolutionary in nature, i.e. it is unlikely there will be a disruptive technological advancement in the foreseeable future. The industry will continue to innovate focusing on aircraft with improved composites and more fuel efficient engines. Examples include the Airbus A320 NEO and the Boeing 737 MAX that have been launched recently.

Long production cycles and the regulated nature of aircraft manufacturing suggest that technological risks can be managed and mitigated.

STRUCTURAL RISKS:

<table>
<thead>
<tr>
<th>Risk Factors</th>
<th>Aircraft Leasing</th>
<th>Infrastructure</th>
<th>Property</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urbanisation</td>
<td>High</td>
<td>Low to High</td>
<td>Low to High</td>
</tr>
<tr>
<td>Growth in emerging markets</td>
<td>High</td>
<td>Low (Core) - High (Opportunistic)</td>
<td>Medium to High</td>
</tr>
<tr>
<td>Environmental</td>
<td>High</td>
<td>Low (Renewable energy) - High (Coal fired facilities)</td>
<td>Low to Medium</td>
</tr>
</tbody>
</table>

Emerging market growth and the related urbanisation are key drivers of the expected growth in aircraft demand; and such as aircraft leasing has a high sensitivity to these factors. Some types of infrastructure and property investments that are available in emerging market countries also show a high sensitivity to these factors, however, the risk profile of these investments is more akin to private equity.

Hence, aircraft leasing should be a more defensive way of gaining exposure to the emerging market growth story compared to infrastructure and property - supported by their greater liquidity and mobility than infrastructure and property.

While aircraft assets have a high sensitivity to the environmental factor, new technology aircraft with lower carbon emissions will help airlines with their broader environmental objectives and better place them for a future when global carbon pricing is fully implemented.
2.3.2. IDIOSYNCRATIC RISK FACTORS

AIRCRAFT LEASING

Given the relatively homogenous nature of aircraft, generally speaking, idiosyncratic risk factors play a less important role in determining the returns from an aircraft.

These risks factors are related to aircraft type specific factors and serial number specific factors:

- Type specific factors include: fleet distribution, engine choice, product support, production cycle.
- Serial number specific factors cover: age, weight, engine, interior configuration, physical condition, maintenance status, hours and cycles.
Examples of idiosyncratic factors for the aircraft leasing business are: level of gearing, debt structures, lease arrangements, etc.

Generally speaking, banks and leasing companies usually look for aircraft in the bottom left quadrant of the table below (low base value depreciation and low market volatility).

Idiosyncratic risks can be very high for infrastructure assets, particularly for the throughput category. Social infrastructure assets, however, are generally more homogenous.

Some examples of idiosyncratic risks for infrastructure are as follows: the type of airport (primary or secondary, single till or dual till operations); the length of concession; the ability to pass through fuel costs; the ability to generate additional revenue from retail or car parking facilities; governance risk, management quality, etc. Importantly, the ultimate risk return profile of an infrastructure asset depends on the underlying transaction structure and capital structure/gearing.

Idiosyncratic risks can be relatively high across the property sector, with location, lease structure, tenancy quality and mix, type, and capital structure being the key ones.
Section 3:
INVESTMENT CHARACTERISTICS OF EQUITY AND DEBT
3.1. CAPITAL STRUCTURE

In this section we analyse and compare the characteristics of equity and debt investments in aircraft leasing, infrastructure and property. We start with summarising a typical capital structure for each of the sectors focusing on core/core plus infrastructure and core/value added real estate assets.

<table>
<thead>
<tr>
<th>Sector</th>
<th>% senior</th>
<th>% subordinated</th>
<th>% equity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aircraft</td>
<td>70</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>50 - 80</td>
<td>10-15</td>
<td>20-50</td>
</tr>
<tr>
<td>Property</td>
<td>15-40</td>
<td>10 - 15</td>
<td>40 - 75</td>
</tr>
</tbody>
</table>

The level of gearing for infrastructure depends on risk levels of the underlying assets/businesses. Gearing is not only important for achieving the capital efficiency but also from an equity investor’s perspective, for generating a sufficient level of return from assets that otherwise might have limited upside potential.

Gearing is also essential for achieving attractive equity returns from aircraft. The level of gearing for aircraft changes with age, which is one of the main risk factors for aircraft assets. As the aircraft ages, the ability to borrow declines and the typical leverage rate declines. For example, the leverage for new aircraft can go as high as 80%; for midlife and older aircraft the gearing will be lower and may often require lessor support and/or cross collateralisation.

Low cost financing is critical for the success of the airline lessor business model. Typically, operating aircraft lessors will arrange finance that is tiered across senior, mezzanine and junior debt tranches. A junior debt provider is essentially an economic owner of aircraft (aircraft lessor) and is exposed to the residual value risk (the equity risk).
Leasing companies can use a variety of leverage structures, including limited recourse, match funded debt which can be a prudent means of financing operating leases. This type of financing will have the following features:

- Scheduled principle and interest payments which correspond to the lease receipts (i.e. either monthly or quarterly).
- Matched currency to the lease (in almost all circumstances this will be USD).
- Matched term (i.e. the loans start and mature on the same dates as the underlying lease).
- Matched interest rates (either the fixed rate loan or floating rate loan).
- Amortisation profile of the debt tranches often resulting in an improving LVR over time. An example of this is shown in the graph below.

**TYPICAL CAPITAL STRUCTURE USED BY A LESSOR**

![Diagram showing typical capital structure used by a lessor with debt amortisation, forecast depreciation curve, equity upside from faster debt amortisation vs aircraft depreciation, and value, equity, and debt layers.]
The rationale for matched funding in aircraft finance is supported by the high degree of correlation between lease rates and borrowing costs. By matching debt and lease terms the financing structure removes the risk of being caught out with interest rate movements mid lease, unless in a default scenario.

HIGH CORRELATION BETWEEN LEASE RATES AND BORROWING COST

Source: Boeing Aircraft Finance
3.2. INVESTMENT CHARACTERISTICS OF DEBT INVESTMENTS

Traditionally, commercial bank debt has been one of the main funding sources for aircraft, infrastructure and property. Regulatory change and volatility after the GFC have weakened the competitive positioning of banks and have reduced their appetite to provide the volume and tenor of debt funding required. At the same time, demand for debt capital remains strong in the sectors/businesses with large upfront capital requirement resulting in a capital shortfall. As noted in the previous sections, aircraft funding requirements for 2013 are expected to surpass US$100bn.

With the banks pulling back there are now opportunities for patient, private capital to fill the funding gap and provide flexible debt structures to capture significant illiquidity premium and generate alpha in the private debt markets across different debt segments.

Before we outline the specific features of debt instruments for each of the sectors we provide a brief summary on limited recourse financing, which is one of the unique features of aircraft finance.

Limited recourse financing is a well established form of aircraft financing. This is a secured loan in which the borrower pledges the aircraft and related security (or a number of aircraft depending on the terms of the loan) directly as collateral. This means that in a lease default scenario the aircraft, and related security is only available to the lenders who have security over it, as opposed to a broader group of creditors who have an unsecured claim direct to the airline. The lender to the aircraft lessor limits its recourse to the specific aircraft which is being financed. This means if there is a default the lender does not have a claim against the lessor’s broader assets, it is limited to the specific aircraft being financed.

In addition, there are also a number of positive covenants on the lessor, incentivising the owner of the aircraft (i.e. the lessor, equity investor) to re-lease or sell the aircraft on terms that fully repay the senior and mezzanine debt lenders.

For an investor, the key attraction of this form of finance is the improved credit and the simple structure with its static amortisation profile.

DEFINITION: LIMITED RECOURSE FINANCING

This is a secured loan in which the borrower pledges the aircraft and related security (or a number of aircraft depending on the terms of the loan) directly as collateral. This means that in a lease default scenario the aircraft, and related security is only available to the lenders who have security over it, as opposed to a broader group of creditors who have an unsecured claim direct to the airline. However, while the cost of financing is lower, the covenants often limit the flexibility of the borrower to deal with assets through term. This type of limited recourse financing, when provided to lessors, limits the claim the lenders can have in a default scenario to the specific aircraft(s) being financed and the associated leases, rather than a more broader claim on the business.
Below we show the comparative characteristics of senior and mezzanine debt across the three sectors:

### Senior Debt features

<table>
<thead>
<tr>
<th></th>
<th>AIRCRAFT</th>
<th>INFRASTRUCTURE</th>
<th>PROPERTY</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Term</strong></td>
<td>Often matched to the term of lease (5 - 10 years)</td>
<td>5 - 10+ years</td>
<td>3 - 5 years</td>
</tr>
<tr>
<td><strong>Interest rate</strong></td>
<td>Base rate plus margin with the base rate (US dollar matched duration swap rate) typically fixed for the term of financing</td>
<td>Floating rate - in local currency</td>
<td>Floating rate - in local currency</td>
</tr>
<tr>
<td><strong>Margin</strong></td>
<td>Vary between 2.5% and 4.5% - depends on the loan term, aircraft type and creditworthiness of the airline lessee</td>
<td>2.5% - 4% depends on the type of the asset</td>
<td>2.5% - 3.5% depends on the type of the asset</td>
</tr>
<tr>
<td><strong>Security</strong></td>
<td>First mortgage over single or multiple aircraft leased to single or multiple airlines</td>
<td>First line charge over substantially all of a business’ assets or shares (vary significantly depending on type/structure of the loan)</td>
<td>First mortgages, charges and guarantees</td>
</tr>
<tr>
<td><strong>P&amp;I schedule</strong></td>
<td>Can be fully amortising or bullet tranche</td>
<td>Can be interest only or amortising</td>
<td>Can be interest only or amortising</td>
</tr>
<tr>
<td><strong>Gearing</strong></td>
<td>Conservative and typically LVR based - up to 50% of Base Value on maturity</td>
<td>50 - 60% (5 x EBITDA)</td>
<td>50 - 70% Loan to value ratio</td>
</tr>
<tr>
<td><strong>Ranking</strong></td>
<td>First in the waterfall for lease and sale proceeds</td>
<td>Senior to all stakeholders - first in the waterfall for proceeds received on a sale of the assets</td>
<td>Senior to all stakeholders - first in the waterfall for proceeds received</td>
</tr>
<tr>
<td><strong>Exit</strong></td>
<td>Fixed maturity</td>
<td>Fixed maturity</td>
<td>Fixed maturity</td>
</tr>
<tr>
<td><strong>Rating</strong></td>
<td>Typically not rated, although some lessors have their own corporate rating or they have rated facilities</td>
<td>Typically not rated although some bonds may be rated (an internal rating of BBB)</td>
<td>Typically not rated (an internal rating of BBB)</td>
</tr>
<tr>
<td><strong>Upfront fees for debt arranger</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Valuation</strong></td>
<td>At cost until impaired</td>
<td>At cost until impaired</td>
<td>At cost until impaired</td>
</tr>
<tr>
<td><strong>Structure</strong></td>
<td>Special purpose bankruptcy remote company (SPC)</td>
<td>Loan/bond at the asset level/holding company</td>
<td>Loan/bond at the asset level/holding company</td>
</tr>
</tbody>
</table>
# Mezzanine Debt Features

<table>
<thead>
<tr>
<th></th>
<th>AIRCRAFT</th>
<th>INFRASTRUCTURE</th>
<th>PROPERTY</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Term</strong></td>
<td>Often matched - loan term equal to lease term</td>
<td>5 - 7 years</td>
<td>3+ years</td>
</tr>
<tr>
<td><strong>Interest rate</strong></td>
<td>Base rate plus margin - with the base rate typically fixed for the term of financing</td>
<td>Floating rate</td>
<td>Floating rate</td>
</tr>
<tr>
<td><strong>Margin</strong></td>
<td>Vary between 5.0% and 7.5% - depends on the loan term, aircraft type and creditworthiness of the airline lessee</td>
<td>3.5 - 7%</td>
<td>5.5 - 6%</td>
</tr>
<tr>
<td><strong>Security</strong></td>
<td>Against single or multiple aircraft leased to single or multiple airlines. Inter-creditor will provide some protection against any enforcement by the senior lenders in the form of cure rights and buy out rights</td>
<td>First line charge over substantially all of a business’ assets or shares</td>
<td>First mortgages, charges and guarantees</td>
</tr>
<tr>
<td><strong>P&amp;I schedule</strong></td>
<td>Typically interest only; bullet repayment funded from the sale of the aircraft or from the lessor via refinancing</td>
<td>Various structures</td>
<td>Various structures</td>
</tr>
<tr>
<td><strong>Gearing</strong></td>
<td>Loan amount sized to the forecast aircraft value on maturity - up to 75% of base value</td>
<td>Up to 15%</td>
<td>10%</td>
</tr>
<tr>
<td><strong>Ranking</strong></td>
<td>Ranks behind senior loans and ahead of equity / junior debt</td>
<td>Ranks behind senior loans and ahead of equity</td>
<td>Ranks behind senior loans and ahead of equity</td>
</tr>
<tr>
<td><strong>Exit</strong></td>
<td>Fixed maturity</td>
<td>Fixed maturity</td>
<td>Fixed maturity</td>
</tr>
<tr>
<td><strong>Rating</strong></td>
<td>Not rated</td>
<td>Typically not rated</td>
<td>Typically not rated</td>
</tr>
<tr>
<td><strong>Upfront fees for debt arranger</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Prepayment risk</strong></td>
<td>Depends on the structure</td>
<td>Depends on the structure</td>
<td>Depends on the structure</td>
</tr>
<tr>
<td><strong>Structure</strong></td>
<td>Special purpose bankruptcy remote company (SPC)</td>
<td>Special purpose bankruptcy remote company (SPC)</td>
<td>Loan/bond at the asset level/holding company</td>
</tr>
<tr>
<td><strong>Valuation</strong></td>
<td>At cost until impaired</td>
<td>At cost until impaired</td>
<td>At cost until impaired</td>
</tr>
</tbody>
</table>
Key features of the debt instruments are as follows:

- Aircraft financing is provided in US dollars. Given the local nature of infrastructure and property assets, financing is typically sourced in local currency.

- For aircraft, fixed debt financing is typically used. There are two senior tranches - a fully amortising tranche that is exposed to credit risk and a bullet tranche that is repaid from the value of the aircraft. For infrastructure and property, there is a strong preference for floating rate financing (short duration) as this may provide a degree of inflation hedging, which is a feature of equity investments in these sectors.

- In general, margins are somewhat higher for aircraft financing, reflecting the sector’s higher gearing levels and credit risk.

Provision of security charge in aircraft finance is more transparent and defined, which is a function of the homogenous asset’s nature.

- Typical security for senior tranches of capital involves a first ranking charge over the aircraft and all associated rights attached to it (such as manufacturer warranties, insurances, rents, etc). The security is typically structured via a security trust arrangement. For infrastructure debt in particular, there is more flexibility with regards to debt structures and security provisions (typically over hard assets, sometimes over shares of the company).

- For aircraft, the most prudent type of funding is matched to the lease term, though other options exist. Matched funding of the capital structure removes a number of risks for investors/lenders. This is not the case for infrastructure as debt is typically used to fund capex, either for refinancing or for acquisitions. Hence, there may be a significant mismatch between cash flow profiles and liabilities. Deal size is generally much larger for infrastructure and property debt funding. There may be several debt providers or debt could be syndicated. Hence, upfront fees for arranging debt may be significant for infrastructure and property deals.

Aircraft senior and mezzanine debt tranches are sized to provide significant head room over the value of the aircraft, in order to repay outstanding principle in an event of default by the airline lessee.

- If in a default situation there is still an amount owing to the lenders after the aircraft has been sold then any outstanding amount remains as an unsecured claim against the airline and will be pursued by the security trustee on behalf of the financiers. Typically, the amortisation profile of the debt tranches is structured to result in an improving LVR over the lease term as debt is generally repaid at a faster rate than the aircraft depreciates.
These debt investments offer a number of common investment features:

- They are all illiquid investments with hard/contracted maturities of between 3 - 7 years. Unless differently specified, cash is returned to investors, as each deal is repaid at the end of the lease term.

- Total returns are expected to comprise a strong cash yield/regular income paid through monthly/quarterly payments.

- Returns are expected to be between fixed income and equity with lower volatility vs equity and vs equivalent fixed rate /long duration bonds.

- These investments should provide low correlation with other asset classes and some diversification benefits within fixed income at a broader portfolio level.

Due to the newness of the asset class there is no historical performance for private aircraft debt investments.

In addition to the opportunities in the aircraft senior and mezzanine debt space, investors can gain exposure to the sector through other instruments such as Enhanced Equipment Trust Certificate (EETC) or Export Credit Agency (ECA) backed loans / bonds. Airlines can also issue Asset Backed Securities (ABS) that are secured by underlying aircraft.

These are generally suitable for more sophisticated investors in the sector as each has some unique risk characteristics. For example with ECA backed instruments investors take on the sovereign risk of the ECA underwriting the collateral, rather than the airline credit risk.

Investors seeking higher returns may choose to finance pre delivery payments (PDP) for airlines or lessors. This type of debt finances deposits for orders placed by airlines and lessors. It could be as much as 1/3 of the value of aircraft and is much shorter in tenor compared to other debt instruments.
3.3. INVESTMENT CHARACTERISTICS OF EQUITY INVESTMENTS

In this section we analyse characteristics of equity investments in aircraft, infrastructure and property.

We note that there are a number of challenges in this exercise, the main being the availability of long term quality and representative data. In undertaking this analysis the following is noted:

- There is a lack of transparency of the data set used for the performance measurement of aircraft investments.
- For infrastructure and property we have used AUD indices that track performance of the assets within fund structures (closed ended and open ended), which tend to be managed as a portfolio, resulting in a less volatile return pattern.
- Aircraft performance is shown in USD at an asset level.
- The returns for aircraft are shown on an ungeared basis, while the returns for infrastructure and property reflect the gearing at either asset level (infrastructure) or fund level (property).
- The published indices for real estate and infrastructure reflect the performance that is based on appraised valuation/unrealised values, which produces a smooth return pattern. This impacts the overall volatility of returns and their correlation with other asset classes.

AIRCRAFT LEASING

The equity (aircraft) owner is the provider of junior debt and invests into an aircraft, typically up to 20 - 35% of its overall cost. The lessor also arranges debt financing that can be split between senior and mezzanine tranches. Equity investors will have security against single or multiple aircraft on lease to one or more airlines, but the investor will rank behind all the other lenders in the security waterfall.

The servicing and debt amortisation of each tranche of capital is generally perfectly matched by the contractual lease payments through the lease term. Hence there is generally no refinancing risk, no interest rate risk and no currency risk in these structures.

Lease rentals in excess of debt service, debt amortisation and operating expenses are paid as running yield to the equity investor through quarterly distributions. In the current environment investors could expect to receive between 7% and 9% USD cash yield.

Equity investors are entitled to residual value profit that is realised on maturity of the lease, either through a sale or a re-lease of the asset. On a re-lease or sale of the aircraft, the benefits of the accelerated debt amortisation are passed on to the equity investor. Hence, the overall equity return will depend on the residual value and the level and amortisation profile of gearing used to finance the aircraft acquisition.
In the current market environment (depending on capital structure), investors can expect to receive a total return of up to 14% +.

Investments in aircraft can be structured in many ways with a view of generating a specific return and income profile. We have focused on the approach that is aligned with the cash generative nature of the asset class and shares some similarities with core/core plus property and infrastructure.

Quite often the investment and liability profile are structured so that senior debt amortises faster than the aircraft depreciates, thus generating additional equity in the aircraft that is realised at its disposal.

Using the same assumptions as the Case Study on page 43, the expected levered returns from aircraft leasing are as shown below.

<table>
<thead>
<tr>
<th>Leverage</th>
<th>Expected Return</th>
</tr>
</thead>
<tbody>
<tr>
<td>60%</td>
<td>10%+</td>
</tr>
<tr>
<td>70%</td>
<td>12%+</td>
</tr>
<tr>
<td>80%</td>
<td>14%+</td>
</tr>
</tbody>
</table>

Using a buy and hold strategy, the Ascend analysis shown in the table over the page for the three widely used aircraft types showed annual unlevered returns of between 6.5% and 8.4% in the 2002 - 2011 period. The volatility of the individual types of airplanes has been similar to the basket of the planes, thus confirming the homogenous nature of aircraft assets.
We show below the performance of the Ascend Aircraft Investment Index (AAII) relative to other, mainly listed asset classes. This is a total return index for aircraft leasing; the index is based on the following assumption:

- Passive strategy with 20 years of aircraft values and lease rate data
- Includes 25 of the most popular aircraft held by lessors over this period
- Buy new aircraft between 0 and 4 years

**HISTORICAL AIRCRAFT UNLEVERED RETURNS FROM 2002 - 2011**

![Graph showing historical aircraft unlevered returns from 2002 to 2011.](image)

**AIRCRAFT VS OTHER ASSET CLASSES - CUMULATIVE RETURNS**

![Graph comparing aircraft to other asset classes.](image)
As it would be expected, the graph shows that the unlisted, unleveraged Ascend Aircraft Index has a much lower volatility of returns than listed market indices, particularly transportation related indices. It also shows that over the 20-year period the returns to the aircraft index have roughly matched that of the S&P500 equity index.

Based on the Ascend index, aircraft assets show a positive, but generally low correlation with most asset classes ranging from 13% (Gold) to 50% (NCREIF - property). Correlation with the broad listed equity market and some listed sectors has been between 11% and 35% (MSCI World Index); the correlation between aircraft assets and the equity performance of listed airlines has been on the low side (14%). The higher correlation with property (NCEEIF) can be explained by the similarities between these two assets (regular income streams) and by the impact of appraised valuation on returns (a smoother pattern).

<table>
<thead>
<tr>
<th>Ascend Aircraft Investment Index</th>
<th>S&amp;P 500</th>
<th>NASDAQ World Index</th>
<th>Dow Jones Transportation Index</th>
<th>S&amp;P 500 Railroads Sub Industry Index</th>
<th>S&amp;P 500 Airlines Index</th>
<th>S&amp;P 500 Global Property Index</th>
<th>Baltic Dry Index</th>
<th>Gold</th>
<th>S&amp;P GSCI Precious Metal Index</th>
<th>NCREIF Property Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>32%</td>
<td>35%</td>
<td>32%</td>
<td>11%</td>
<td>14%</td>
<td>31%</td>
<td>-4%</td>
<td>6%</td>
<td>13%</td>
<td>50%</td>
</tr>
<tr>
<td>S&amp;P 500</td>
<td>1</td>
<td>91%</td>
<td>75%</td>
<td>47%</td>
<td>64%</td>
<td>51%</td>
<td>24%</td>
<td>-19%</td>
<td>-12%</td>
<td>2%</td>
</tr>
<tr>
<td>MSCI World Index</td>
<td>35%</td>
<td>1</td>
<td>63</td>
<td>39</td>
<td>48</td>
<td>63</td>
<td>42</td>
<td>8</td>
<td>16</td>
<td>2</td>
</tr>
<tr>
<td>Dow Jones Transportation Index</td>
<td>32%</td>
<td>75%</td>
<td>63%</td>
<td>79%</td>
<td>74%</td>
<td>54%</td>
<td>4%</td>
<td>-16%</td>
<td>-9%</td>
<td>-7%</td>
</tr>
<tr>
<td>S&amp;P 500 Railroads Sub Industry Index</td>
<td>11%</td>
<td>47%</td>
<td>39%</td>
<td>79%</td>
<td>1</td>
<td>45%</td>
<td>63%</td>
<td>5%</td>
<td>18%</td>
<td>20%</td>
</tr>
<tr>
<td>S&amp;P 500 Airlines Index</td>
<td>14%</td>
<td>64%</td>
<td>48%</td>
<td>74%</td>
<td>45%</td>
<td>1</td>
<td>27%</td>
<td>8%</td>
<td>-38%</td>
<td>-27%</td>
</tr>
<tr>
<td>S&amp;P Global Property Index</td>
<td>31%</td>
<td>51%</td>
<td>63%</td>
<td>54%</td>
<td>63%</td>
<td>27%</td>
<td>1</td>
<td>51%</td>
<td>36%</td>
<td>43%</td>
</tr>
<tr>
<td>Baltic Dry Index</td>
<td>24%</td>
<td>42%</td>
<td>4%</td>
<td>5%</td>
<td>8%</td>
<td>51%</td>
<td>1</td>
<td>44%</td>
<td>45%</td>
<td>-41%</td>
</tr>
<tr>
<td>Gold</td>
<td>-19%</td>
<td>8%</td>
<td>-16%</td>
<td>18%</td>
<td>-38%</td>
<td>36%</td>
<td>44%</td>
<td>1</td>
<td>98%</td>
<td>3%</td>
</tr>
<tr>
<td>S&amp;P GSCI Precious Metal Index</td>
<td>13%</td>
<td>-12%</td>
<td>16%</td>
<td>-9%</td>
<td>20%</td>
<td>-27%</td>
<td>43%</td>
<td>45%</td>
<td>98%</td>
<td>1%</td>
</tr>
<tr>
<td>NCREIF Property Index</td>
<td>50%</td>
<td>2%</td>
<td>-7%</td>
<td>-9%</td>
<td>-15%</td>
<td>-4%</td>
<td>-41%</td>
<td>3%</td>
<td>5%</td>
<td>1%</td>
</tr>
</tbody>
</table>

Source: Ascend Advisory
INFRASTRUCTURE

To measure the performance of infrastructure equity we have used the IPD Unlisted Infrastructure index. The index measures the performance of 7 Australian domiciled funds and 13 infrastructure portfolios held by large Australian institutional investors. The index includes 162 assets, the majority of which being classified as “core plus” infrastructure. The gearing level of these assets ranges and it is typically between 50% to 70%. The universe covers both domestic (65%) and overseas assets with a total value of over A$26bn as of March 2013. Returns are shown on a net of fees basis.

ROLLING ANNUAL RETURNS FOR INFRASTRUCTURE FUNDS

In the period between September 2002 and March 2013 the index returned an average annual return of 11.5% with standard deviation of 6.4%. As mentioned previously, these returns reflect the gearing at asset level. Returns have generally been positive throughout the period, posting a negative 7% return during the GFC.
For illustrative purposes we show below the returns compiled by Preqin. Preqin currently holds net-to-LP performance data for 124 unlisted infrastructure funds. The performance of older funds can provide an indication of what to expect when younger funds mature. Infrastructure funds of vintages (1993-1999) have produced an 8.7% median net IRR.

MAX, MINIMUM AND MEDIAN NET IRRS FOR UNLISTED FUNDS BY VINTAGE YEAR

Source: Preqin
To measure the equity performance of unlisted property, we have used the IPD Unlisted Property Index. The index measures the performance of 15 diversified, open ended funds that invest across shopping, office and industrial Australian properties. The total value of the assets was $A46bn as at end of March 2013. Returns are shown on a net of fees basis. This index has a fairly short track record, going back to 2008. Therefore in our view it is not representative of core real estate performance.

The average annual returns since 2008 was 3.6% while standard deviation was 7.9%. The index fell sharply during the GFC recording a negative return of more than -10%.

ROLLING 12 MONTH RETURNS FOR AUSTRALIAN WHOLESALE CORE PROPERTY FUNDS (A$)

Source: 160
We also show below the Preqin statistics/charts on the performance of real estate funds that invest outside of Australia. Both vintage 2000 and 2009 funds are generating median net IRRs of over 15%.

MAXIMUM, MINIMUM AND MEDIAN NET IRR’S FOR UNLISTED FUNDS BY VINTAGE YEAR

In addition, we have looked at the property performance as measured by the NCREIF index. The NCREIF Property Index is a quarterly time series composite total rate of return measure of investment performance of a very large pool of individual commercial real estate properties acquired in the private market for investment purposes only (in the US). As at March 2013, total market value of the properties was US$329bn and total number of properties in the index was 7,181.

Since inception, the index returned an average return of 9.40% accompanied with volatility of 8.1%. During the 1999 - 2013 period, which matches the data we have for the aircraft performance, the return and volatility were 9.2% and 9.7% respectively. The index fell for two years in a row in 2008 and 2009, declining by more than 23% during this period.

NCREIF - PROPERTY PERFORMANCE (Y/Y% CHANGE)
HIGH YIELD BONDS

Finally, we analyse the performance of high yield debt as measured by the Barclays US High Yield Index. Since 1999 the index returned an average return of 8.6% with the volatility of 18.2%. The key source of return was the income/coupon that averaged 8.1% during this period.

HIGH YIELD BONDS VS AIRCRAFT (COUPON VS LEASE RATES)

The performance between high yield bonds and aircraft equity investments have some common characteristics.

Both asset classes rely on coupon/income for generating the bulk of their total return. For aircraft leasing investments, the income component is higher than for high yield bonds, however this compensates for the lower capital gains potential to be generated from aircraft assets. The volatility of high yield debt returns is significantly greater compared to aircraft assets, and it is almost completely driven by the volatility of capital return (similar to aircraft but to a lesser degree).
THE VOLATILITY OF HIGH YIELD DEBT RETURNS IS SIGNIFICANTLY GREATER COMPARED TO AIRCRAFT ASSETS
Section 4:
PORTFOLIO CONSIDERATIONS
In this section we summarise the common characteristics of the three asset classes and highlight their unique features/differences. We also outline the rationale for including these assets in a portfolio, the considerations that need to be taken in the asset allocation process and the implementation issues.

4.1. COMPARATIVE ANALYSIS OF AIRCRAFT LEASING, INFRASTRUCTURE AND PROPERTY

The asset classes share a number of common physical and economic/financial characteristics:

They are underpinned by hard assets. The aircraft assets are mobile while infrastructure and real estate assets are immobile.

They are illiquid. Due to their scale, infrastructure is probably the least liquid asset class, while aircraft are most liquid.

They have long economic lives of 25 years+. These are typically much longer for property and infrastructure assets.

They are valued using appraised based valuation. Generally, terminal value accounts for a small percentage of the asset’s value.

They require high upfront capital expenditure. These are typically highest for infrastructure, followed by property and aircraft.

They generate relatively predictable cash flows. These are most predictable for aircraft and property, and least predictable for infrastructure.

They are typically financed with a significant level of debt. The highest level of gearing is employed in aircraft, followed by infrastructure and property.
In terms of differences we note the following:

Aircraft assets are highly fungible and are global in their recognition. They are mobile and can be redeployed. On the other hand, infrastructure and property assets are local in their nature.

It is difficult to replicate infrastructure and property assets due to a high degree of importance of local factors (location, local customer base, regulatory, etc).

- This means that valuation can be sticky for infrastructure and property.
- Pricing of aircraft seems to be more efficient.
- Infrastructure and property assets generate growing cash flows that typically provide some inflation protection and hence store value over the long term. As a naturally wasting asset with lease values declining with the age of aircraft, investments in aircraft assets do not provide any inflation hedge. Infrastructure and property belong to the “Real Asset” Category. Aircraft have commodity like characteristic.

Aircraft assets/values are exposed to economic cycles. Infrastructure and core property assets tend to be more defensive. Core infrastructure assets’ earnings in particular are deemed to be quite stable through the cycles.

- The economic cycle is more important for aircraft, followed by property and infrastructure.
- The value of aircraft assets is more sensitive to oil prices relative to infrastructure assets (although some asset may have a high exposure to oil prices) and property.
- Because lease payments are “hell or highwater” and generally for terms ranging between 5 to 12 years, there is a relatively low volatility of lease income which tend to make the aircraft investments less volatile.
- Infrastructure and property have considerably more exposure to asset specific risks (idiosyncratic risk) relative to aircraft due to the homogenous nature of the asset class. In general this means that:
  - asset selection is critically important in infrastructure and property (albeit to a lesser degree in property).
  - aircraft, in addition to the economy, the sector/industry dynamics (supply and demand) have a greater role in the performance of the aircraft assets/investments.

The market for aircraft is much more dynamic compared to the one for property and infrastructure.

There are a number of factors that are changing both on both the supply and demand side. The market for infrastructure and property assets generally move slower and assets are much more lumpy - especially infrastructure assets.

Aircraft are more exposed to technological risks/obsolesces.

However, there is a clear line of sight for new aircraft design and technology and very long lead times which allow this to be managed.
With regards to their general investment characteristics, we note the following:

Aircraft and property offer a higher return component from income compared to infrastructure where in general returns tend to be dominated by capital gain.

This is reflective of the underlying economics of the assets/business.

All asset classes seem to offer low volatility of returns relative to listed markets.

Returns from aircraft assets seem to be the least volatile. An important caveat here is the lack of transparency in the historical data, which is the basis of this finding.

Based on forecast returns for aircraft, the available historical returns, and adjusting for the impact of gearing on infrastructure (high) and property (low), returns from aircraft should be similar to returns generated from "core plus" infrastructure assets over the longer term. We would expect aircraft assets to generate higher returns than core property investments though.

To generate more competitive equity returns from aircraft, it is necessary to rely more on gearing, relative to infrastructure and property.

Higher gearing is a function of the requirement to amortise debt due; consistent with the wasting nature of the aircraft. Further, the transparency around lease payments and strong security provisions embedded in the finance structures lend this asset class to comparatively higher levels of gearing.

While not exposed to credit markets directly, aircraft leasing investments carry a higher credit risk (the risk of default of the airlines) compared to infrastructure and property.

In the case of an airline default, and assuming the ownership of the right aircraft, the credit risk is transformed into a risk of re-leasing the asset to another credit worthy airline within a short period of time. This ultimately depends on the strength of demand for air travel and available capacity at the time of default and quality of manager.

The matched funding in US dollars that is available in aircraft finance removes a number of investment risks (refinancing, currency, interest rates) which is not the case for infrastructure and property investments.

This should reduce the volatility of returns from aircraft investments (relative to infrastructure and property) and facilitate the implementation at a portfolio level given their US dollar exposure.
4.2. PORTFOLIO ROLE

In this section we outline the rationale for including these assets into a portfolio, the considerations that need to be taken in the asset allocation process and the implementation issues.

EQUITY INVESTMENTS IN AVIATION

Aircraft equity investment can bring the following benefits to the portfolio:

- Attractive absolute returns and low volatility - resulting in attractive risk adjusted returns;
- Attractive and stable cash flows;
- Some diversification benefits via low correlations with other asset classes; albeit with some general loss of diversification during 2007-09 similar to other asset classes.

Infrastructure investments provide the following benefits to the portfolio:

- Attractive absolute returns and low volatility - resulting in attractive risk adjusted returns;
- Some inflation hedging benefits;
- Good defensive qualities during the economic and financial downturn although not absolute resilience;
- Diversification benefits via low correlations with other asset classes, albeit with some loss of diversification during the 2007-09 period;
- Relatively predictable cash flows;
- Potential for ESG investing.

Property has traditionally been included in a diversified portfolio for the following reasons:

- Diversification;
- Potential for inflation hedging;
- High stable income;
- Attractive risk adjusted returns relative to other asset classes;
- Potential for ESG investing.

As longer, more established institutional asset classes, property and infrastructure investments offer benefits that are very clearly understood within a portfolio context relative to aircraft.

The main benefit of the inclusion of aircraft investments is the potential of achieving attractive risk adjusted absolute returns while generating solid cash yields.
PRIVATE DEBT INVESTMENTS IN AVIATION

Generally, private debt sits between traditional fixed income and equities from a risk/return perspective.

While there is little data available, it should offer higher yields and better relative value than traditional fixed income, with less volatility and greater capital stability than equities.

Relative to property and infrastructure, aircraft debt investments offer higher overall returns due to higher margins (to compensate for the higher credit risk) and the pricing structure - they are typically priced off the base rate (duration weighted swap rates), rather than floating rates as is the case with infrastructure and property. As such, they do not provide a hedge against rising interest rates and inflation, and as a result may be more volatile through the term of the investment.
4.3. ASSET ALLOCATION

Property has been a mainstay of institutional portfolios for at least a decade if not longer, while infrastructure is quickly gaining traction with institutional investors. Both assets have become even more attractive following the financial crises and the investors’ ongoing search for yield. Due to their perceived inflation hedging and diversification benefits, investors have been investing increasing amounts of money into the real asset category to which infrastructure and property belong. Demand for these assets, the weight of money and the re-rating of the infrastructure sector combined with their generally lumpy nature appears to have pushed down their expected returns.

Nonetheless given their ability to store value and the multiple benefits they can provide to the portfolio, both property and infrastructure are likely to continue to be part of the investors’ strategic asset allocation.

Both debt and equity investments in aircraft provide exposure to a dynamic sector with a growing opportunity set.

Aircraft operating leasing, which has financed 35-40% of new deliveries over the past decade, is set to increase its share in aircraft finance. Large aircraft deliveries driven by emerging markets growth and the requirement for fleet replacement over the next three to five years will need to be financed at a time when liquidity is scarcer and risk is being repriced.

THIS CREATES STRONG TAILWINDS FOR THE SECTOR PROVIDING AN OPPORTUNITY FOR THE INVESTOR TO POTENTIALLY EARN OUTSIZED RETURNS
While the opportunity set is increasing, the highly dynamic and fragmented sector is likely to attract more players from the deep pool of capital looking for competitive risk adjusted returns. These developments should be monitored for signs of the sector’s reduced potential to continue to deliver its attractive investment benefits. Given this, the cyclical nature of the industry and the lack of historical performance data it could be argued that aircraft investments be considered within the **Opportunistic category** in a diversified portfolio. Alternatively, these investments can be included into the **Absolute return category** of the portfolio, however, it is important to take account of its liquidity profile within a broader portfolio context. Another way to implement these investments into the portfolio is to allocate to aircraft investments within the **Private Debt category**, with the aircraft equity investments (junior debt) being part of the higher yielding private debt component.

Both infrastructure and core property assets/investment have some growth characteristics as their value increases over time due to the growing cash flows. Hence, they are sometimes likened to a bond with a growing coupon (infrastructure) or to index linked bonds (property).

Aircraft assets have some unique investment characteristics and hence it is difficult to find its listed market comparable. Given the high level of yields generated by the sector and the relative risks from aircraft investments, they share some similarities with High Yield bonds (HYBs). However, they, differ from HYBs in a number of ways: HYBs are unsecured whilst aircraft investments are secured; HYBs are interest only while each aircraft lease payment is a mix of principal and interest, therefore HYBs carry a greater principal risk than aircraft as provided you hold an aircraft through its economic life the capital at risk diminishes over time; and aircraft investments are significantly less volatile than HYBs, which is a function of their unlisted nature.

Based on these similarities and differences aircraft leasing investments can be likened to a HY, secured, amortising bond.

Aircraft investments offer investors an exposure to emerging market growth that is gained through a less volatile, global asset class priced in US$, thus avoiding currency issues that often exist with investments in infrastructure and property in emerging market countries.
4.4. IMPLEMENTATION

As is the case for infrastructure and property, investors can gain access to the aircraft leasing sector through different structures such as funds (open ended/closed ended), separate mandates and direct investments. However, the availability, particularly of managed offerings, currently significantly lags that of property and infrastructure.

Each of these structures has its own advantages and disadvantages that can potentially impact on the investment outcome significantly. Investors can also invest through different strategies, debt or equity, as well as invest in the strategies with different risk levels (aircraft age, leverage).

TWO WAYS OF INVESTING:

1) Closed Ended Structure

A closed-ended structure can offer the following benefits to investors:

- The ‘closed structure’ can provide diversification from traditional investment markets, by preventing capital inflows and redemptions during the fund's life.
- It can offer a clearly defined timetable for the investment and realisation of capital. This enables the investor to re-assess the opportunity set and make proactive decisions about the allocation to the sector.
- The structure is well suited to aircraft assets given their cyclical nature, known lease terms and the fact they are wasting assets with relatively predictable values.
- Potentially better transparency and accountability, which is particularly important for fee calculations and periodic valuations.
- Can provide access to more opportunistic transactions and where based on a known initial aircraft portfolio, can provide greater transparency and certainty of risk and return outcomes and scenario analysis.

Two main disadvantages of closed ended funds are:

- The timetabled structure can put pressure on GPs to deploy and ultimately realise capital, and can result in overpayment and/or forced selling.
- Investors may in cases have to commit to a ‘blind pool’ rather than being able to review seed assets and/or an existing portfolio.
2) Open Ended Structure

Adopting an open-ended structure can also provide a number of benefits:

- A ‘buy-and-hold’ strategy can provide more strategic long-term diversification by smoothing investor exposure to both broader economic market cycles as well as to specific aviation cycles.
- It can enable greater amortisation of capital cost over a longer time frame which in turn will reduce residual value risk when aircraft are sold or remarketed.
- An open-ended structure can reduce the pressure on both purchasing aircraft at inflated prices and having to sell assets at depressed market values.
- By investing in aircraft through successive lease cycles investors can benefit from increasing cash yields caused by rising lease rate factors - further enhanced by the debt amortisation process.

In turn, there are a number of disadvantages associated with open-ended structures:

- It can lead to greater investor uncertainty about future investments and portfolio returns.
- As a pooled strategy it can create challenges with regard to liquidity and exit mechanisms.
- It can expose investors to greater re-lease, re-marketing and re-financing risk by way of potentially holding older aircraft. Thus asset and credit risk can increase but in turn be mitigated by on-going investments in newer aircraft.

BESPOKE OPPORTUNITIES

Due to the smaller scale of the assets and the lower capital requirements for individual mandates, the asset class is suited to providing bespoke portfolios with different risk profiles. However, it is important that the overall transparency is not compromised through highly complicated structures.

Finally, to extract attractive returns from this asset class, it is necessary to employ a skilful manager with strong credit and debt arranging skills who is nimble and well plugged into this dynamic market. An asset management capability is also critical. On a relative basis, diversification and portfolio management are more important in this asset class compared to infrastructure and property.
Section 5:

CONCLUSION

Compared to property and infrastructure, aircraft leasing investments are a new asset class. The sector’s fragmented nature, its inherent lack of transparency and the sparse performance data have made it difficult for many investors to analyse and understand this type of investment.

Based on the analysis of the aircraft leasing business model, the sources of value creation and the financing structures available to the sector, aircraft leasing is a viable investment that should be considered by institutional investors.

The predictable cash flow generated through aircraft leasing and limited recourse financing allows for a high gearing to be utilised at the asset level potentially increasing returns for equity investors. However, because of the matched funding to lease payments and the US$ pricing of aircraft, the financing, currency and interest rate risks are lower compared to infrastructure and property investments.

The asset class appears to be entering a period of strong growth underpinned by structural factors such as emerging markets growth and the aircraft replacement cycle. These are taking place at a time when the supply of capital is constrained, offering an opportunity for early investors to enjoy the benefits this asset class can potentially bring to the portfolio. While aircraft leasing can provide some diversification during times of financial distress and appears to be relatively less volatile compared to the mainstream listed investments, the main reason for investors to consider this investment are its potentially attractive absolute returns which comprise a solid income component.

The valuation of property and infrastructure assets seems to have risen significantly over the last couple of years on the back of lower risk free interest rates, the lower expected returns by investors and the re-rating of the infrastructure sector. With this background, and given the tailwinds for the sector outlined above, it appears likely that returns from aircraft leasing investments could be similar to the ones generated by infrastructure and higher compared to property.

Due to its mix of investment characteristics and the exposures to market, economic and structural risk factors, the sector does not lend itself to an easy asset allocation classification. However, because of the cyclicality of the industry and the lack of robust historical performance data, it is appropriate that aircraft investments should be considered within the Opportunistic category within a diversified portfolio. Alternatively, these investments could be included into the Absolute Return category of the portfolio, however, it is important to take account of its liquidity profile within a broader portfolio context. Another way to implement these investments into the portfolio is to allocate to aircraft investments within the Private Debt category, with the aircraft equity investments (junior debt) being part of the higher yielding private debt component.

However, to get access to the benefits of the sector, it is critical that investors employ a highly skilled and experienced manager.
AIRCRAFT IS A VIABLE INVESTMENT, DUE TO:

- **Various Investment Structures**
- **Predictable Cashflows and Limited recourse Financing**
- **High Absolute Returns**
- **Lower IR & Currency Risks** due to US$ pricing of the assets
- **Offers Diversification**
- **Lower Volatility** due to unlisted nature

**Investment Considerations for Aviation:**

**Opportunistic**
DUE TO LACK OF TRANSPARENCY AND PERFORMANCE DATA

**Absolute Return**
HOWEVER TAKE NOTE OF LIQUIDITY PROFILE AS PART OF OVERALL PORTFOLIO

**Private Debt**
AIRCRAFT EQUITY INVESTMENTS BEING PART OF THE HIGHER YIELDING DEBT COMPONENT
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