

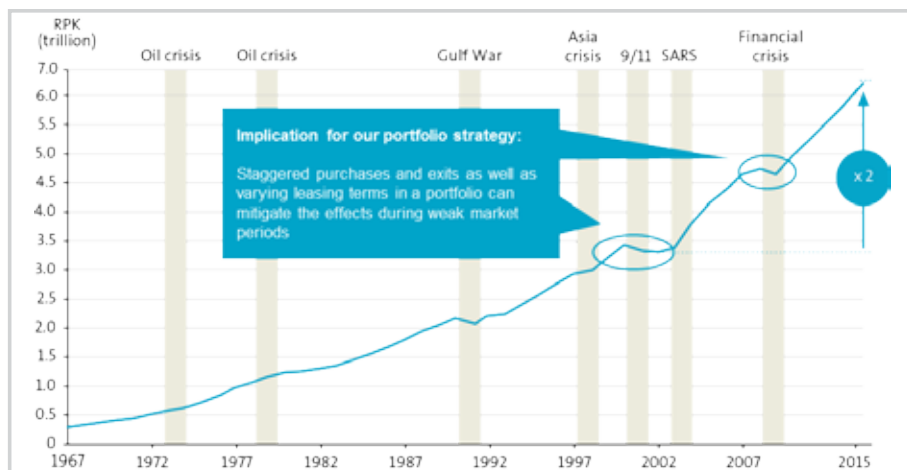
# AIRCRAFT LEASING - A PROMISING INVESTMENT MARKET FOR INSTITUTIONAL INVESTORS

## 1. INTRODUCTION

Until recently, aviation as an asset class has hardly received any attention from most continental European institutional investors. It is a different story in the Anglo-Saxon investment community: this investment class has long been established as a component to a well-diversified portfolio.

Aircraft are a durable, standardised product, flexible in deployment and limited in supply. Leasing them via medium- to long-term operating lease contracts provides for steady and stable cash flows. As a real asset investment, aircraft should be considered by investors following a defensive strategy during this ongoing phase of low interest rates as they combine stable cash flows, improved return potential compared to other investments such as bonds with portfolio diversification. For insurance companies, the possible diversification effects can also be of particular interest with regard to Solvency II.

GLOBAL ANNUAL AIR TRAFFIC IN BILLION RPK (REVENUE PASSENGER KILOMETRES)



Source: Own research based on Airbus Global Market Forecast 2016-2035 and ICAO

The aviation market has been growing steadily for decades. Even global crises such as the Gulf War, 9/11 or the financial crisis have had only relatively short-term effects on global air traffic.

Operating leases have become a common form of institutional investment in this growth market. Since its beginnings in the early 1970s, the growth of the aircraft leasing market has outpaced that of the global aircraft fleet over the same period. Aviation lessors are encountering steadily increasing demand from international airlines.

The value retention of aircraft and their marketability are crucial to the success of an aircraft leasing fund. The extent to which the objectives of institutional investors – stability of returns, performance and risk management – are fulfilled is assessed in more detail below.

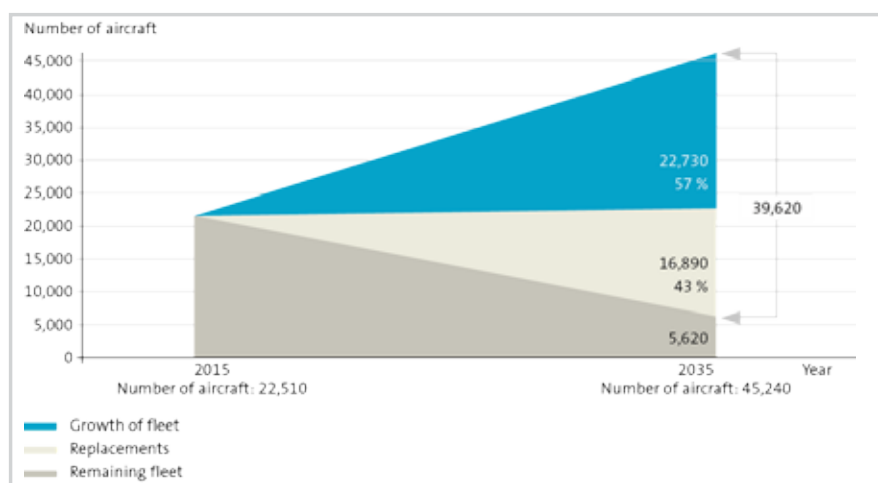
## 2. DEVELOPMENT OF THE AVIATION MARKET

The continuous growth of the global aviation market is well documented in various studies (including studies by IATA, Airbus and Boeing). The same applies to the relatively rapid recovery the market has demonstrated to date without exception following major crises. This is not least reflected in the fact that flying can hardly be substituted as a means of transportation. The correlation between global economic development and air traffic is also quite evident.

THE AVIATION MARKET  
HAS SHOWN HISTORICALLY  
STRONG GROWTH AND  
RESILIENCE AGAINST  
SHOCKS

The outlook for the future development of the global aircraft fleet is also robust. The International Air Transport Association (IATA) for example forecasts a doubling of the global aircraft fleet by 2034.

### DEVELOPMENT OF GLOBAL COMMERCIAL AIRCRAFT FLEET (FORECAST)



Source: Boeing Current Market Outlook 2016–2035

In accordance with this forecast, the diagram above shows an estimated demand for around 38,000 new aircraft in the next 20 years. The required investment amounts to USD 5.6 trillion.

### GROWTH FACTORS FOR GLOBAL AVIATION

The positive growth expectations with respect to both passenger and freight volumes are driven by the following factors:

- Global economic growth, particularly in emerging economies, e.g. in Asia and South America
- Continuing urbanisation
- An expanding middle class globally, with expected growth estimates according to OECD from currently 32 percent to 62 percent in 2032
- The rise in global trade and industrial production
- Increasing liberalisation of the aviation market

Boeing is expecting passenger air traffic to increase by an annual average of five percent until 2034. Above-average growth will be seen in the emerging economies of Asia (+ 6.3 %), South America (+ 6.0 %), Middle East (+6.2 %) and Africa (+5.7 %).

### OLIGOPOLY OF AIRCRAFT MANUFACTURERS

The corresponding increase in demand for aircraft is being met by a limited number of manufacturers. Aircraft production is technology-intensive. This is reflected in the long development times and the resultant high market entry barriers for new manufacturers. The competitive situation has for many years been characterised by an oligopoly of just a few leading producers, consisting of Airbus (Europe), Boeing (USA), Bombardier (Canada) and Embraer (Brazil). For widebody and narrowbody aircraft, the

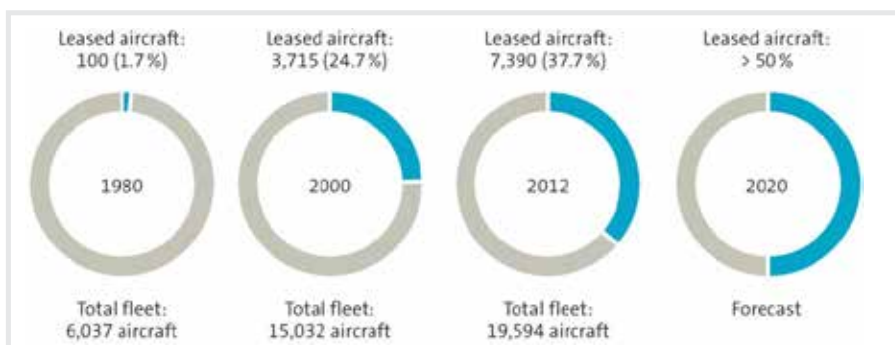
number of leading suppliers is further reduced to the duopoly of Airbus and Boeing. In line with the small number of manufacturers, the expansion of production is very slow. The production or order lead time is currently around three to five years at Airbus and Boeing, with around 5,550 aircraft currently on Airbus's order books. New market entrants such as Suchoi (Russia), Comac (China) and Mitsubishi (Japan) have so far only been successful in their domestic markets with relatively few sales (e.g. Suchoi), or have models in the development phase (e.g. Comac and Mitsubishi).

It is a major step for an airline to select a new manufacturer. If they want to place a new aircraft into service internationally, pilots must first be specially trained on that aircraft. Its reliability must be proven and its suitability for worldwide deployment assured, for example in terms of global spare parts availability, etc. The process prior to which a new aircraft manufacturer is able to launch into the international market is therefore lengthy.

### SIGNIFICANCE OF THE AIRCRAFT LEASING MARKET

In 1970, the share of leased aircraft in the global fleet was 0.5 percent, with 17 out of 3,722 aircraft in total under lease. By 2012, 37.7 percent or 7,390 aircraft out of 19,594 were leased. The leased aircraft growth rate significantly exceeded the overall aircraft growth rate.

DEVELOPMENT OF OPERATING LEASING FOR AVIATION



Source: Boeing Capital Corporation

Investments in aircraft require a high capital commitment. Operating leasing of aircraft therefore constitutes an important financing alternative for airlines. It allows airlines to respond to short- and medium-term fluctuations in demand without having to make capital-intensive investments. By leasing a portion of their fleet, airlines are able to improve their liquidity position and their balance sheet. The trend toward aircraft leasing has gained momentum as a result of the deregulation and liberalisation of aviation. In the face of ever-increasing competition, most airlines are attempting to finance their aircraft fleet while maintaining as much liquidity as possible.

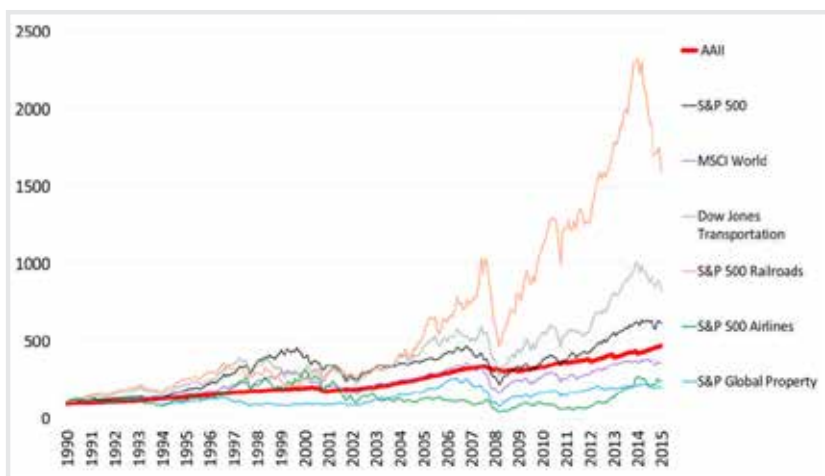
THE TREND TOWARDS AIRCRAFT LEASING IS BECOMING MORE PRONOUNCED

### 3. SPECIFIC FEATURES OF THE ASSET CLASS

A performance comparison with other equity investments provides solid arguments when assessing equity investment in aviation. Ascend, a globally recognised valuation expert and consultant in the aviation sector, has created the Ascend Aircraft Investment Index (AAII) for this purpose. The AAII is a special index for aircraft leasing which documents the development of a representative portfolio over the past two decades and draws comparisons with other equity investments.

The AAIL follows a passive portfolio strategy, i.e. it does not undertake active portfolio management during the twenty-five year lifetime of the aircraft between initial purchase and final sale.

#### THE ASCEND AIRCRAFT INVESTMENT INDEX COMPARED TO OTHER INDICES



Source: Ascend Advisory

In direct comparison with the other asset classes, the progress of the AAIL shows a very steady progression with stable performance and low volatility. The rate of return on the portfolio over the entire period (1991-2012) is 6.2 % without leverage.

The significant deviation in performance from that of the S&P 500 Airlines Index is remarkable. It demonstrates that the aircraft leasing business is virtually independent of the airline business. While airlines are in the front line and face the impact of economic fluctuations such as falling demand, increasing oil prices, etc. head on, lessors are in a comparatively better position and are able to obtain constant, long-term lease income during the term of the leasing agreement, provided the airline remains solvent.

LOW CORRELATION OF AIRCRAFT LEASING BUSINESS WITH ECONOMIC FLUCTUATIONS

Aircraft leasing further shows a comparatively low correlation with other global economic indicators and factors, which again reinforces the suitability of the asset class as a diversification instrument.

#### CORRELATION OF AAIL WITH OTHER INDICES

Index type (all figures in %)	AAIL	S&P 500	MSCI World Index	S&P Global Property Index	S&P 500 Airlines Index
AAIL	100	40	45	34	13

Source: Ascend Advisory

#### SIGNIFICANCE OF ACTIVE ASSET MANAGEMENT

As indicated, the AAIL index follows a passive strategy. Active asset management can, in contrast, use a variety of methods to stabilise and optimise performance against the index. Given that aircraft are highly technical assets, it is essential that the management of the opportunities and risks inherent in the product lie with an experienced asset manager.

## AIRCRAFT INVESTMENTS AND SOLVENCY II

In light of Solvency II taking effect on 1 January 2016, insurance companies are considering the attractiveness of investing in real assets such as aircraft within the framework of the new equity capital requirements. Although a full analysis of this issue cannot be undertaken within the scope of this paper, an addition of investments in assets which diversify a portfolio, reduce the duration mismatch and diminish earnings volatility will improve the Solvency II capital position.

## 4. OPPORTUNITY-RISK PROFILE OF AIRCRAFT LEASING

The financial success of an aviation fund is highly dependent on two factors: the reliability of lease payments by the airline and marketing opportunities and the residual value of the aircraft. Active portfolio management must assess and manage the risks specific to the asset. In this respect, the ability to put the asset to work on a global basis, is a fundamental advantage.

ADEQUATE RISK ASSESSMENT AND CONTROL AS THE BASIS FOR ECONOMIC SUCCESS

### ASSET QUALITY

Each type of aircraft must be assessed in detail, taking into account factors such as the size of its operator base, its fungibility and fuel consumption. These factors determine the development of an aircraft's residual value over time and its marketability at the end of a lease.

### AIRCRAFT MAINTENANCE AND OPERATION

The lessee is responsible for regular aircraft maintenance. This is subject to strict standards and regulations established and monitored by aircraft manufacturers and international supervisory authorities. Although an aircraft will constantly depreciate in value as an asset over its approximately 25-year useful life, regular technical overhauls and the replacement of major parts ensure its rejuvenation. At the end of its service life, individual parts which are relatively new, such as the engines, can still be salvaged, e.g. through dismantling and sale (partout). When it comes to remarketing an aircraft, impeccable technical condition and proper operation – and the corresponding documentation of these over time – are the decisive factors determining how much „potential“ an aircraft still has.

### RESIDUAL VALUE FORECAST

A reliable estimation of the residual value of an aircraft, which is the forecast market value at the time of its planned remarketing, is of central importance for the success of a leasing transaction. This estimate is usually performed by specialised international experts and is ultimately determined by the expected demand for this specific type of aircraft.

Factors that have a particular impact on this demand include the global prevalence of an aircraft model, its versatility of use on routes that correspond to the airlines' flight route concept, operating costs of the aircraft, future flying behaviour of passengers and the strategies of the airlines themselves. Furthermore, that the aircraft is well-maintained and has complete documentation is a fundamental requirement for its successful remarketing.

### AIRLINE SOLVENCY

The choice of lessee plays a significant role in securing ongoing payment of lease rates. Accordingly, the creditworthiness of the respective airline must be

examined closely as well as the sustainability of its corporate development and strategy. Nevertheless, having a marketable aircraft is more important than the actual solvency of an airline. If a lessee defaults, a widely marketable aircraft model can be re-leased more rapidly than a less prevalent one.

## 5. VALUE CREATION OPTIONS FOR ACTIVE ASSET MANAGEMENT

The durability of aircraft and their long-term leasing, in some cases across different lease cycles, require specialised active asset management. The composition of a portfolio and the selection of individual aircraft for it take place against the backdrop of investment criteria defined in line with the current market situation as well as the anticipated value retention and marketability of the asset. In this context, aspects such as known technical problems, simplicity of maintenance and operability, fuel consumption, etc. must be assessed. With used aircraft, the maintenance condition and documentation status must be examined by an expert prior to the purchase.

### CONTRACTUAL ARRANGEMENT

Contractual arrangements such as the lease agreement, loan agreement and purchase agreement are decisive factors in the performance of the lease and ultimately of the entire portfolio. For example, contract negotiations must incorporate the expert technical evaluation of the aircraft to an appropriate extent, such as in terms of agreed return conditions or compensation payments. Exchange rate risk can occasionally be partially mitigated by way of a contractually defined split lease rate payments in Euros and US Dollars. Debt financing is also provided in US Dollars and is currency-matched (aircraft are per se a US Dollar investment).

### VALUE CREATION DURING THE SERVICE LIFE/LEASE TERM

Active and proactive fund management requires ongoing monitoring and supervision of the aircraft and the aviation market, including with regard to technical developments, the fleet policy of airlines and development of demand. Another important area is the supervision of the asset itself. Monitoring the proper implementation of the maintenance schedule, regular on-site inspections and seamless documentation of all maintenance and repair work are essential prerequisites for the successful marketing of an aircraft. This requires highly specialised technical know-how.

The solvency of the lessee should also be revisited on a regular basis in order to enable forward-looking and prompt action.

### OPPORTUNITY MANAGEMENT

Unscheduled developments may require corrective measures. Repossession is one example: if the lessee experiences serious difficulties in making payments, or in an extreme case, becomes insolvent, the asset manager will take immediate action to repossess the aircraft, repatriate it and execute a new lease or sale as quickly as possible. Alternative exit strategies such as the early sale of an aircraft, possibly in conjunction with the existing lease agreement, present another type of opportunity.

These can be appropriate if a favourable market situation facilitates an early sale or if it is foreseeable that at the time of the planned sale in accordance with the contract, the market is expected to be saturated with a certain model of aircraft. An asset manager's in-depth technical expertise and reliable access to a global network for marketing are critically important, particularly when action must be taken quickly and alternative solutions identified and implemented in a short time frame.

INDISPENSABLE:  
ONGOING MARKET  
MONITORING AND  
REGULAR  
ASSET MONITORING

## 6. CONCLUSIONS

Assets such as real estate, shares or commodities are well-established additions to the portfolios of institutional investors. In the current investment environment characterised by low to negative interest rates, the aviation asset class, which is not new but is still relatively unknown in continental Europe, is increasingly attracting attention.

Upon closer consideration, aircraft leasing, with its stable returns and an underlying asset which is readily marketable, flexible in deployment, durable and fungible, presents a potentially attractive investment for institutional investors. All the more so as the aircraft leasing business is less volatile with regard to performance and relatively independent of general factors driving global economic development. The active management of an aircraft portfolio can further optimise the performance of the investment product and effectively manage asset-specific risk factors.

This qualifies aircraft leasing as an attractive portfolio addition with significant diversification characteristics, which enable participation in the strong and relatively crisis-resilient growth of the aviation market, without being fully exposed to the fluctuations of the global economy. In matching the long-term liabilities of a typical portfolio of insurance products, the alternative asset class of aviation can also potentially reduce the equity set-aside requirement due to its diversification effects under Solvency II.

## CONTACT



**Douglas Edwards**

Member of the Executive Board  
KGAL Capital GmbH & Co. KG  
e-mail: douglas.edwards@kgal.de



**Jon Dyar Boles, CFA**

Director Institutional Business International  
KGAL Capital GmbH & Co. KG  
e-mail: jon.boles@kgal.de



**Tim Van den Brande**

Director Institutional Business International  
KGAL Capital GmbH & Co. KG  
e-mail: tim.vandenbrande@kgal.de



**Stephan Gundermann**

Head of Portfolio Management Aviation  
KGAL Investment Management GmbH & Co. KG  
e-mail: stephan.gundermann@kgal.de

### SOURCES

Airbus Global Market Forecast 2016-2035 | Ascend Flightglobal Consultancy, London/UK | Boeing Current Market Outlook 2016–2035, Seattle/USA | International Civil Aviation Organization (ICAO), Quebec/Canada

### DISCLAIMER

The information contained in this document does not constitute investment advice or financial analysis, but rather merely reflects the views of KGAL. Successes achieved in the past are not a guarantee for future development of an asset. Unless otherwise stated, the views contained in this document are based on research, calculations and information by KGAL. These views can change at any time, independent of economic and other conditions.

All rights are reserved. All views expressed here are based on current predictions of the respective market situations, and can thus change at any time without prior notice. There is no guarantee that the countries, markets or branches will develop as expected. Investments contain certain risks, including political and currency-related risks. The rate of return and value of the underlying asset are subject to fluctuations. This can lead to complete loss of the capital invested.

This document is not a sales brochure, and does not represent an offer for purchase or sale of shares in an investment fund or financial instrument. The document is only for advertising and information purposes. This document is not tailored to the personal needs of possible investors. This document does not replace individual consultation based on sales brochures. This document makes no claim to completeness. No participation in an investment shall occur based on this document.

### KGAL GROUP

Tölzer Straße 15 · 82031 Grünwald · Germany  
T +49 89 64143-0  
T +49 89 64143-150  
kgal@kgal.de · www.kgal-group.com