
Discussion Paper

Object finance: The characteristics of aircraft finance

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This document aims to foster debate on the future regulatory capital treatment of aircraft finance, part of the specialised lending asset class. It is part of a series of AFME discussion papers looking at the specific characteristics of specialised lending asset classes, their risk profiles and regulatory capital treatment.

The paper describes the aircraft finance business and industry-wide default and loss data. It also explains the structures aircraft finance providers build into their deals to ensure they have several layers of protection and collateral acting as credit risk mitigants. Real-life case studies are included to show how these structures work in practice. The paper suggests an alternative approach to Standardised capital treatment for these exposures, taking inspiration from commercial real estate capital treatment given the similarities with aircraft finance: long life assets used as collateral. Nevertheless, the paper maintains that most risk sensitive approach to capital requirements, i.e. the IRB approach, should continue to be used by those banks who qualify for this method.

1. About aircraft finance

Aircraft finance is often classified within the Specialised Lending asset class and is a type of object finance.

Aircraft finance represented a market of some 122bn \$ in 2015, of which 34 bn\$ of financing was carried out via commercial banks (source Boeing).

The type of aircraft financed are wide bodies, narrow bodies and regional aircrafts. The object finance loans do not include the financing of private jet aircrafts.

Loans are generally granted to a special purpose vehicle (the "SPC"), enabling the segregation of the asset and its financing, and conveying direct control of the asset to the lender through a structure comprising, among others, a pledge on the SPC shares, a security on the asset (mortgage in the law of the jurisdiction where the aircraft is registered, English / NY law mortgage, the assignment of the lease contract and insurance, and potentially registration of the security interests with the International Registry (in the framework of the Cape Town Convention and Aircraft Protocol).

Repayment of the loan is done through the revenues generated by the business of the airline flying the aircraft which enables it to pay the lease rents covering the debt service.

Lenders do not always need to set up SPCs to finance the acquisition of an aircraft for their airline clients. Indeed, in jurisdictions favourable to lenders and recognising the lenders' rights (such as the US where access to the aircraft is granted within a short time frame to the lender by Chapter 11 rules), lenders can finance the acquisition of the asset via a direct mortgage loan. In such a case, the repayment of the debt will come, as above, via the cash flows generated by the business of the airline flying the aircraft enabling to cover the debt service. The main security on a mortgage loan will be the registered mortgage on the asset.

The motivation for granting the loan lies in the asset, its capacity to generate positive operating cash flow for the airline, the credit quality of the lessee (i.e. the airline), and the favourable legal framework that enables the lender to rapidly and effectively access property and control of the asset. The structuring of the deal aims to ensure rapid and efficient access to the aircraft, so as to allow lenders, in the case of default of the lessee, to sell the aircraft or find a new lessee for the aircraft.

Aircraft finance generally exhibits low default rates and low loss rates, as loans are conservatively structured through three main pillars that all contribute to the strength of the structure:

- The assessment of the credit quality of the lessee; and linked to that, the assessment of the legal framework of the country in which the aircraft will be operated and registered (Geneva and/or Cape Town Conventions).
- The assessment of the legal structure: can the asset be segregated in a bankruptcy remote structure, which will enable the lenders (via a Security Trustee) access to the legal ownership of the asset? Quick access to the asset enables lenders find a new leasing solution for the asset, or can also enable them to sell the aircraft.
- The assessment of the value of the asset at Day One, and projected values during the duration of the Loan, and as a result, calculation of the Loan To Value ratio (the "LTV ratio" being Outstanding Loan Amount/Aircraft value). The Aircraft value is defined by each lender under its own methodology, based on the lender's knowledge of the market and the asset values (e.g. peer comparisons of asset prices seen in the market for different clients), and based on asset values provided by various external appraisers. A conservative LTV ratio is below 1. Most of the time, the profile of the underlying loan is amortisation over a duration much shorter than the asset's economic life.

Given that the amortizing loan profile is shorter than the asset economic life (generally 12 years for a loan when the economic life for an aircraft is typically 20 to 25 years), the LTV tends to decrease over time, thus leaving an extra cushion of cover in case of steep depreciation of the asset value during the life time of the loan (for example in cases of an unforeseeable obsolescence of the asset type or of a down-cycle). Aircraft values are somewhat cyclical due to the effect of traffic growth which can decrease (or in rare instances be negative) during a period of economic stress, or due to specific external events (such as 9/11), and generally a period of time is needed for the offer (i.e. deliveries of aircraft) to adapt to the evolution of demand (i.e. traffic). This balancing effect, combined with possible fuel costs variations, imply that aircraft values can vary within a certain range. However, as per multiple studies published by the IATA, worldwide growth in air passenger traffic is correlated with world GDP growth. Therefore, past figures and current forecasts show a long term growth in worldwide air passenger traffic; values are cyclical but in case of decrease, usually return back to the mean amortizing profile after a few years. For this reason, defaults will not always imply a sale of the aircraft immediately as lenders can choose to keep the asset, entering into new leases (generally operating leases), until the market is back to an acceptable level, in terms of lease rates or asset values. Liquidity of the aircraft is an important factor, notably linked to the performance of the asset. Therefore, lenders will cautiously select the type of aircraft financed and favour those with a good market acceptance.

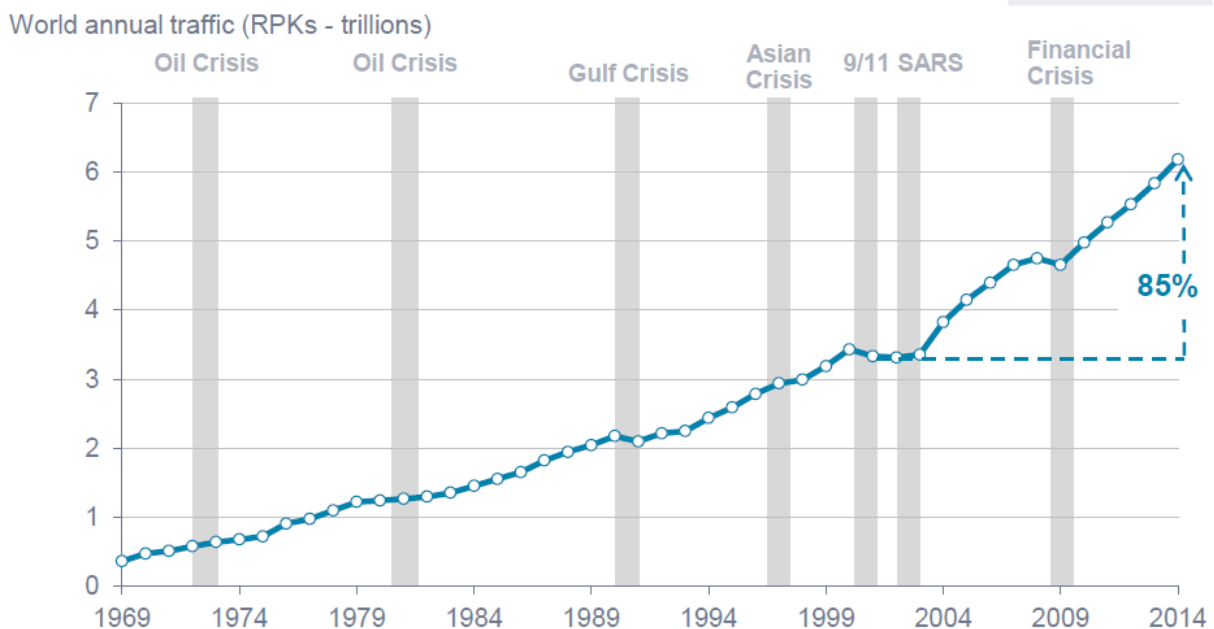
Reconfiguration and recovery costs are also taken into account in structuring the deal which implies that the LTV is generally lower than 1, depending however on the credit quality of lessee, and the type of aircraft, parameters being fine-tuned on a case by case basis.

For excellent counterparts, the LTV can be close or above to 1 on the first years. If higher, the “top up” slice of the loan would be considered as a “corporate loan” risk-wise and overall pricing would be assessed accordingly. If a subordinated loan is considered in the financing package then its tenor would be reduced to a tenor where the credit horizon on the lessee is deemed correct.

In case of a default, the loan can be restructured through the postponement of its initial maturity, which is possible given the long residual aircraft life available after the original maturity, and /or through the sale of the aircraft.

2. The risk benefits of the structures underlying Aircraft Finance deals

Aircraft finance relates to long life assets, benefiting from a long term growth in terms of worldwide traffic which provides a good visibility of underlying cash flows over the long run. As shown hereunder (source Airbus), air travel has proven to be resilient to external shocks and there has been an almost constant growth of traffic but for exceptional events.



- The specialised lending structures described above enable lenders to control the asset financed and the cash flows they generate.
- Lenders benefit from several layers/cushions of protection thanks to these structures: conservative Loan To Values, and loan terms much shorter than the asset life, implying a decrease of the LTV ratio over time.
- In case of a default, the loan can be restructured through the postponement of its initial maturity, which is possible given the long residual aircraft life available after the original maturity, and /or through release or sale of the aircraft.

3. Low Loss rates

For all these reasons, aircraft finance has experienced low losses. The GCD data pooling shows an average historical loss rate of 11% for aircraft finance.

	ODF	LGD	Loss Rate
Aircraft finance	1,96%	16%	0,31%

ODF : Observed Default Frequency.

Source GCD . Risk free discounting rate, +5% were conservatively added to the historical LGD.

Assertions that specialised lending exposures (i.e. including aircraft finance) exhibit higher risk/losses than other types of corporate exposures are therefore do not appear justified. Such statements are inconsistent with industry experience and data, as notably shown in the table above regarding aircraft finance. An average loss rates of 0.31% average is much lower than the loss rates for unsecured corporate loans.

Generally, it is the secured and structured nature of this asset class (as shown above) that drives its low risk profile. Moreover, diversification between different types of aircrafts and airlines means that banks can benefit from portfolio effects.

4. The proposed RSA approach

On an indicative basis only, and without taking into account a margin of prudence at this stage, we assessed the RW that would result from the default rate and LGD observed on historical data (see above).

	RW based on historical data	SA proposal	SA proposal/ RW with observed data , 5 years
Aircraft finance	55 %	120%	2x

RW calculated with an assumption of an average life of 5 years

Although not strictly comparable, the Basel Revised SA proposals would imply a RW around twice as high than what would be calculated with the observed default frequency and LGD data.

=> The Revised SA proposal thus seems overly conservative.

Indeed, the current RSA proposal does not reflect the underlying risk levels of these exposures and in particular **fails to recognise the value of the underlying collateral**. For example, under the new proposals, lending to an airline without security on an aircraft would receive a RW of 100%, lower than lending with a specialized lending structure, ie with a 1st ranking security on the aircraft, which receives 120% under the SA proposal. In other words, the value of aircraft under the SA proposal is not only considered to be 0 but actually makes a negative contribution to the risk weight.

Too much simplicity in capital treatment can have negative consequences

- With the proposed RWAs not adequately reflecting the risks, the same RWA would apply to transactions of very different levels of risk. This can lead to the choice of the riskiest transactions by the lender, as they will have higher margins for the same amount of RW. Decision making by banks between transactions of different levels of risk may become biased and the quality of banks' portfolios over time would deteriorate.
- Conservative structuring would not be incentivised.
- The current SA proposal would strongly and negatively impact the Aircraft Finance activity of banks and have strong negative impacts on the real economy, in both developed and emerging countries, implying a strong reduction of the volumes financed and a steep increase in the cost of financing.
- RWA is a key parameter in the allocation of their resources by banks. The current SA proposal would render the Aircraft Finance activity uncompetitive at current pricing levels and it is likely that some banks would leave this market because of increasingly lower returns on equity.
- It would imply a development of the shadow banking, i.e. the development of non-regulated finance.

5. Alternative SA capital treatment

The nature of the underlying asset means that this category of asset finance is substantially similar to commercial real estate. Therefore, SA risk weights should be based mainly on the collateral securing the relevant exposure. Indeed:

- The general comment in paragraph 49 **page 34 of the RSA consultative document** (Real estate exposure class) can apply to object finance exposures where experience demonstrates "sustainably low credit losses associated with the exposures";
- The requirements laid out in paragraph 50 **page 34** can be applied *mutatis mutandis* to aircraft/rail/shipping financing loans (with relevant drafting); in particular legal enforceability of creditors' claims is effective and valuation of assets is generally appraised independently;
- **Object Finance assets are more standardised and loan repayment schemes are amortising versus bullet profiles.**
- The current RSA proposal does not reflect the low loss rates, of around 0.22-0.41 basis points observed on these asset classes, i.e. more than twice lower than for a corporate unsecured exposure.

⇒ **Proposal for an alternative SA for aircraft finance:**

- **Based on observed loss rates for object finance, which are more than twice as low as unsecured corporate exposures, the following matrix for senior positions in Aircraft Finance could be used (and is built on tables 11 and 12 from page 37 for CRE of the RSA consultation paper):**

Table 11 secured loan with recourse

	LTV <=70 %	70 <LTV <=85 * %	85% <LTV <=100 %	LTV >100 %
Risk weight	Min ([40 %-50%], RW of counterparty)	Min ([50%-75%] , RW of counterparty)	Min ([75 % -85%], RW of counterparty)	Min ([85%-100%], RW of counterparty)

Table 12 secured loan without recourse

	LTV <=70 %	70% <LTV <=85 * %	85% <LTV <=100 %	LTV >100 %
Risk weight	[50 %-60%]	[60%-85%]	[85%-95%]	[95%-100%]

- Using LTV buckets should trigger a progressive risk weight calculation in order to avoid cliff effects.
- **Should corporate exposure RW be reduced (e.g. from 100% to 75%), then the above mentioned matrix should be adjusted downwards accordingly.**

Alternatively, the RSA could envisage a **slotting methodology** could be developed, based on a number of basic criteria among which: long term lease agreements (with relevant counterparties); ratios (at times can include DSCR calculation); country risk; (after mitigating elements/securities/covers); parent (sponsor’s) quality; recourse/non-recourse to a lessor; asset liquidity (although this may be reflected in the LTV calculation); seniority, etc.

6. Case studies

We present here 2 real life case studies to provide practical illustrations of the benefits of the underlying structures in aircraft financing helping to avoid defaults and maximise recoveries.

Case study 1

This case illustrates the case of difficulties of the carriers and a favorable outcome through the sale of the aircrafts, thanks to a close monitoring and the benefit of the security package, with no loss for the lenders.

➤ **Background :**

- Late 2000’s, an Asian start-up carrier launches a long-haul low-cost airline to fly from Asia to destinations on European and American continent
- Carrier commits to purchase up to four used B747-400 aircraft from other airlines. All aircraft were 8 years old at time of delivery to the Carrier.
- A pool of banks commits to finance up to three of these aircraft, including PDP (pre-delivery payment)
- Financing is structured as a 5-year commercial loan for an amount of 65% of the aircraft purchase price amortizing down to a full recourse balloon A typical structure is put in place, with banks lending to a special purpose vehicle leasing to the Carrier, with the banks having assignment of securities (share pledge and lease assignment) together with a direct first priority mortgage on each aircraft.

- **What went wrong:**
 - Fierce competition from established airlines on similar routes place pressure on ticket prices and revenue of the Carrier
 - Operational costs were higher than estimated (*inter alia*, due to fuel price increase)
 - Carrier operates from secondary airport, reducing passenger appeal
 - As a result, the Carrier files for liquidation after one year of operation
- **Outcome:**
 - The Agent Bank relied on its dedicated recovery team to enforce the securities and ensure proper recovery of outstanding amounts, in coordination with internal legal teams and local commercial teams
 - Timeline:
 - J°: **Carrier files for liquidation**
 - J°+1d: Agent Bank mobilizes internal teams and external legal counsels
 - J°+15d: Agent Bank appoints a technical manager and mandates a remarketing agent, who immediately launches remarketing efforts (advertisement, RFP and dedicated contacts)
 - J°+30d: Aircraft Legal repossession completed and lease agreement terminated with Carrier
 - J°+50d: Sale LOI signed with a potential buyer
 - J°+65d: formal Sale agreement executed for 3 aircraft
 - J°+80d: first aircraft sale completed
 - J°+97d: both 2nd and 3rd aircraft sale completed
 - J°+103d: **banks principal and interests outstanding are fully repaid** (including default interests and work-out costs), with remaining cash available for junior creditors
- **Conclusions:**
 - Continuous risk monitoring, responsiveness and action speed enabled ad-hoc team to enforce bank's rights efficiently
 - Agent Bank's team relationship with industry professionals (technical, remarketing, legal, ...) enables to gather a very reactive team at short notice
 - Bank's prudent approach (appropriate advance rate relative to asset and corporate) provides sufficient bank's loan cover
 - Proven structuration process (loan documents and security package) enables efficient work-out process, within short timeframe

Case study 2

This case illustrates the good management of the financing of a difficult asset which ended favorably with no loss, thanks to a close monitoring and refinancing of the balloon at maturity.

- **Background :**
 - 12 year Loan with an open balloon at maturity (without recourse to the airline)
 - To finance 3 A340-300 on lease to a flagship carrier
 - At maturity (March/April 2016):
 - The 3 aircrafts are redelivered to the SPC lessor/borrower
 - The open balloon gets reimbursed at maturity with the sale/re-lease of the 3 aircrafts.

- **What went wrong :**
 - The airline was struggling to reach profitability in a competitive and difficult market, but was supported by the State who has a 100% ownership
 - The bank anticipated that the refinancing of the balloon could be difficult based on the value of the A340-300
 - The transaction was therefore classified in default 1 year before maturity

- **Outcome :**
 - Anticipation of the redelivery of the aircrafts by starting negotiations with the airline in 2015
 - A close monitoring of the aircraft's condition: annual inspections
 - A dedicated team involving origination, asset monitoring, legal, workout
 - A strong interest from the airline to extend the leases for an additional 6 years
 - Negotiation of the terms of the lease extension with the airline. The owner/lessor SPC remains the same. The lease extension enables to refinance the balloon at maturity, with a small balloon at the 6 year new maturity (secured by a deposit).
 - Debt was 100% refinanced including interests. No upfront loss borne by lenders.
 - This lease extension was possible thanks to the remaining economic asset life at maturity.
 - As aircraft finance term is much shorter than the economic asset lives, this enables to restructure if needed.

7. Conclusion

The Basel 2 framework has contributed to a more risk sensitive capital framework. Preserving this risk sensitive approach is fundamental to meeting the challenges of specialised lending and in particular of **object finance** and its ability to respond efficiently to market demand. Only risk sensitive approaches are able to select the most suitable lending activities, contributing to the stability of the banking sector.

A significant rise in specialised lending risk weightings would force banks to allocate much more capital against those exposures, which could only be achieved through a combination of increases in pricing conditions, degradation of loan terms to the detriment of the borrower (e.g. lower advance rates, shorter tenors). This process may ultimately lead to a large reduction in the volume of funds allocated to those activities by affected banks with a detrimental effect on the global economy.

RW levels should reflect the risk profile of these loans which are essential for the real economy in both developed and emerging countries.