Aviation Debt
Update on Debt Financing for Airlines and Aircraft Lessors

Purpose
The purpose of this paper is to provide an update on some of the topics, issues, and analysis contained in the paper "Selling Aviation Debt Securities to EU Insurance Undertakings" by John Caslin and Jane Gleeson, which was presented to the Society of Actuaries in Ireland on 5 December 2018. It is recommended that this update be read in conjunction with that paper, which contains a more thorough exploration of the topic.

Introduction
Compared with the fall in demand for passenger airline travel caused by the events of 9/11 and the Global Financial Crisis (GFC), the demand shock induced by the COVID-19 pandemic has been much greater and much longer in duration. However, with the arrival of COVID-19 vaccines, changes in the competitive landscape in the airline industry, and a potential contraction in bank finance for airlines and aircraft lessors, opportunities have emerged for investors with the appropriate risk appetite to provide senior secured debt capital to the aviation sector.

Air Travel Revived by COVID-19 Vaccines
The advent of a number of vaccines against COVID-19 and the roll out of mass vaccination across the developed world are likely to resurrect the airline industry. With the lifting of restrictions, there is likely to be a rise in passenger numbers. Recovery will take time, but passenger numbers are likely to be back to 2019 levels by the end of 2023.

Load Factors
In Q4 2020, average load factors in China and Russia were reported to be running at 70% while in the US they are reported to be running at between 50% and 55%. As the vaccination of citizens across the globe is rolled out, there is likely to be a significant pick-up in passenger numbers due to pent up demand for travel among a public that has been locked down on and off for periods of between six and twelve weeks.

Competition in the Airline Market
Prior to 1978, the airline industry in the U.S. was highly regulated. Following the deregulation of the industry in 1978, there was a huge rise in competition which ultimately resulted in a series of high profile bankruptcies. Broadly speaking, between 9/11 and the GFC, the industry rationalised resulting in something of the order of 15 major U.S. airlines becoming very profitable, with many obtaining investment grade credit. By way of contrast with the US, prior to the pandemic the airline industry in Europe was much more competitive and much more fragmented. COVID-19 seems to be leading to further rationalisation of the industry similar to that seen in the U.S. Many smaller airlines have been forced out of the market during the pandemic. Since the COVID-19 pandemic began, at least 20 airlines have collapsed or are in court-supervised re-organisations, hoping to restructure.

These include in Europe:

- Flybe (UK), SunExpress Deutschland (Germany), Atlas Global (Turkey), Braathens Regional Airlines (Sweden), LEVEL Europe (Austria), Ernest Airlines (Italy), and Air Italy;

in the Americas:

- Trans States Airlines (USA), Compass Airlines (USA), Miami Air International (USA), RavenAir (USA), LATAM (Argentina), Compass Airlines (USA), Air Georgian (Canada), Avianca (Peru);

and elsewhere in the world:

- Tigerair Australia, Virgin Australia, South African Airways, and NokScoot (Thailand).

The surviving airlines, many of which have received government support in one form or another, are likely to face a significant reduction in competition with consequent implications for margins once air travel returns to 2019 levels.

Aircraft Financing

Aircraft financing has become more difficult for aircraft lessors and airlines alike. For many banks specialising in aviation debt finance, accounting standards like IFRS 9 in the EU have forced banks to make provisions for loan losses over the lifetime of the loans, whereas in the pre-COVID-19 period the provisions generally related to expected loan losses over the next 12 months. This has increased banks' loan loss provisions and also their appetite to sell such loan portfolios. In the short term, banks are likely to be more focused on the management and disposal of aviation loans than on providing further financing to aircraft lessors and airlines.

A New Era for Aircraft Financiers

With traditional bank lending to the aviation industry significantly reduced, covenants for those seeking to finance aircraft have become significantly more onerous for borrowers and simultaneously more favourable for lenders. The following is a summary of broad trends:

- LTV: The range of loan-to-value (LTV) ratios has reduced substantially from the 75% - 80% range in the pre-COVID-19 era to a 50% - 70% range currently.
- COLLATERAL: Lenders are currently restricting collateral to new narrow-body, low-noise, highly-fuel-efficient aircraft; lenders are unlikely to lend either on older aircraft, such as those more than five years old, or on wide-body aircraft. Leases on the latter aircraft type are generally being repudiated by airlines in examinership as airlines focus their recovery plans on short-haul flights within their regions of operation.
- COST: The average cost of borrowing, in terms of the margin over USD swaps or treasuries has more than doubled from about 1.75% to 4.50%.
- AMORTISATION SCHEDULE: The portion of a loan's principal balance that must be amortized over the term of the loan has increased to at least 80% whereas pre-COVID-19 it could have been as low as 50%. Thus, from the perspective of lenders, the acceptable remaining balance due as a final payment at the end of the loan term has decreased from 50% to 20%. As part of their underwriting, lenders are likely to look closely at every time point in the amortisation schedule to ensure that: (i) the

estimated value of the aircraft exceeds the value of the outstanding loan; and (ii) the value of the outstanding loan is falling faster than the rate of depreciation of the aircraft.

- BORROWERS: Loans are restricted to the strongest credits or national carriers with an historic strong track record of government support. On balance, there is probably a preference for lending to lessors because of the presence of security deposits and maintenance reserves which are provided by the lessee of the aircraft and over which the lender can take security.

Risks in Aviation Debt Financing

The risks in aviation debt financing can be broadly divided into the following categories:

1. Creditworthiness of the airline or aircraft lessor as ultimate borrower
2. Jurisdiction of the borrower
3. Nature of the underlying collateral
4. Structure of the debt security
5. Covenants

We briefly discuss each of the major risks identified and suggest some strategies to mitigate those risks.

Creditworthiness of airline or aircraft lessor as ultimate borrower

Persistent or sudden deterioration in the key financial metrics of the ultimate borrower presents a risk to lenders. Lenders should also be alert to changes in ownership (particularly where the borrower is acquired by a private equity firm), missed payments, changes in where the borrower is on the spectrum between a market leader and a weak player in the borrower's areas of operation, and the general outlook for the borrower and the aviation industry.

The key financial metrics of the ultimate borrower can be summarised as operating profit, the number days for which the ultimate borrower's cash will cover operating expenses, how many times interest and rental charges are covered by operating profit, and the net-debt-to-equity ratio. Access to lines of credit or additional equity capital from owners prepared to support the borrower are also important qualitative metrics. An analysis of currency risks should be undertaken to assess the mismatch between interest and rental payments, which are usually denominated in USD, and the currencies of denomination of fares and other income.

Jurisdiction

The jurisdiction of the borrower can pose a serious risk to the lender. The jurisdiction of the borrower will shape the rights of the lender in the event that it needs to repossess the aircraft. Repossession is made easier where the borrower is based in a country which has ratified the Cape Town Convention and adopted 'Alternative A' insolvency provisions which provide for a definite deadline for an insolvency administrator and the creditor to negotiate the retention or return of the aircraft.

Nature of the underlying collateral

It is essential for lenders to assess the risk of the value of the aircraft posted as collateral being below the outstanding principal on the loan at the time of default. Lenders should not rely solely on appraisal values for the purpose of this assessment; appraisal values ought to be

stressed as the sale of the underlying collateral to repay the outstanding debt may be a distressed sale. Lenders can reduce their risk of loss in the event of default by restricting the collateral upon which they provide finance to new narrow-body, low-noise, highly-fuel-efficient aircraft, compared to lending on collateral consisting of older aircraft such as those more than five years old and wide-body aircraft.

Structure of the debt security

Weaknesses in the structure of a debt security increase the lender's risk. The structure for a loan to finance the purchase a single aircraft should include a special purpose vehicle (SPV) as owner of the aircraft, assignment of the voting shares in the SPV to the lender, a mortgage over the aircraft, assignment of the aircraft lease, the aircraft warranties, and the insurance policies covering the aircraft to the SPV, control of the bank accounts of the SPV, and the appropriate international and local law filings as advised by external counsel to ensure the security of the collateral.

Covenants

A risk for lenders is the possibility of the equity stakeholders withdrawing their capital ahead of repayment of the loan. The lender should ensure that excess cash flows are used in the first place to repay debt rather allow equity investors to withdraw their capital. Risk can be further reduced by a range of covenants in relation to such metrics as loan-to-value and debt-service-coverage ratio. In addition, if the creditworthiness of the ultimate borrower decreases, the lender might seek further protection by requiring the borrower to post additional collateral.

Sustainability

Jet aircraft typically have a 20-year life; thus, those entering service in 2030 will have to comply with likely regulations in relation to net-zero carbon emissions by 2050. Therefore, not surprisingly, Boeing recently announced that it will begin delivering commercial airplanes capable of flying exclusively on biofuel by the end of the current decade.

Aircraft rely on energy-dense fuels for long-distance travel to keep the contribution of the weight of the fuel to total weight as low as possible. In that regard, pure hydrogen is not an efficient solution. However, based on current aircraft jet engines, a synthesised e-fuel, e-kerosene, made from renewable hydrogen and carbon from sustainable CO_2 can replace jet fuel in aviation.

The commercialisation of e-fuels for aviation will require new technologies in areas like large-scale hydrogen electrolysers, carbon capture, and e-fuel synthesis. The current systems for distributing and storing of fuel can easily be adapted to e-fuels. There are signs of progress in this area. Already, in Germany, a consortium based at the Heide Refinery is working on substituting fossil-based hydrogen consumption with renewable hydrogen, and creating a large scale supply of renewable e-fuels.

Conclusion

With reduced competition in the airline industry, the arrival of and roll out of COVID-19 vaccines, pent up demand from customers, a substantial reduction in traditional bank finance for the aviation industry, a strengthening of borrowing covenants in favour of lenders, and increased spreads on aviation loans, there are opportunities for investors with the appropriate risk appetite, and working in partnership with experienced aviation professionals, to provide debt capital to the aviation industry.