AWG Basel IV submissions and action documents

Contents

AVIATION WORKING GROUP

Revised rules capital requirements --

Unique features and data supporting low LGDs for aircraft-backed loans

December 2016

Key points

1. The BCBS is currently revising draft proposals on future capital requirements.

2. AWG has submitted documents dated 10 March 2016, 21 June 2016, and 14 October 2016 explaining current and historical LGDs for aircraft-backed loans (extremely low) and the effects of the current proposals (substantial increase in required capital, in some cases requiring more capital for aircraft-backed secured, than for unsecured, loans). AWG has stated, and provided substantial data supporting, these points.

3. In this PowerPoint (next slide) we depict these low LGDs, and the unique features of, and data supporting LGDs for, aircraft-backed loans (amplified in the subsequent three slides).

4. These points should be considered in connection with the finalisation of the new capital rules, including as support for the retention of internal modelling and in setting out parameters for slotting of aircraft-backed loans.

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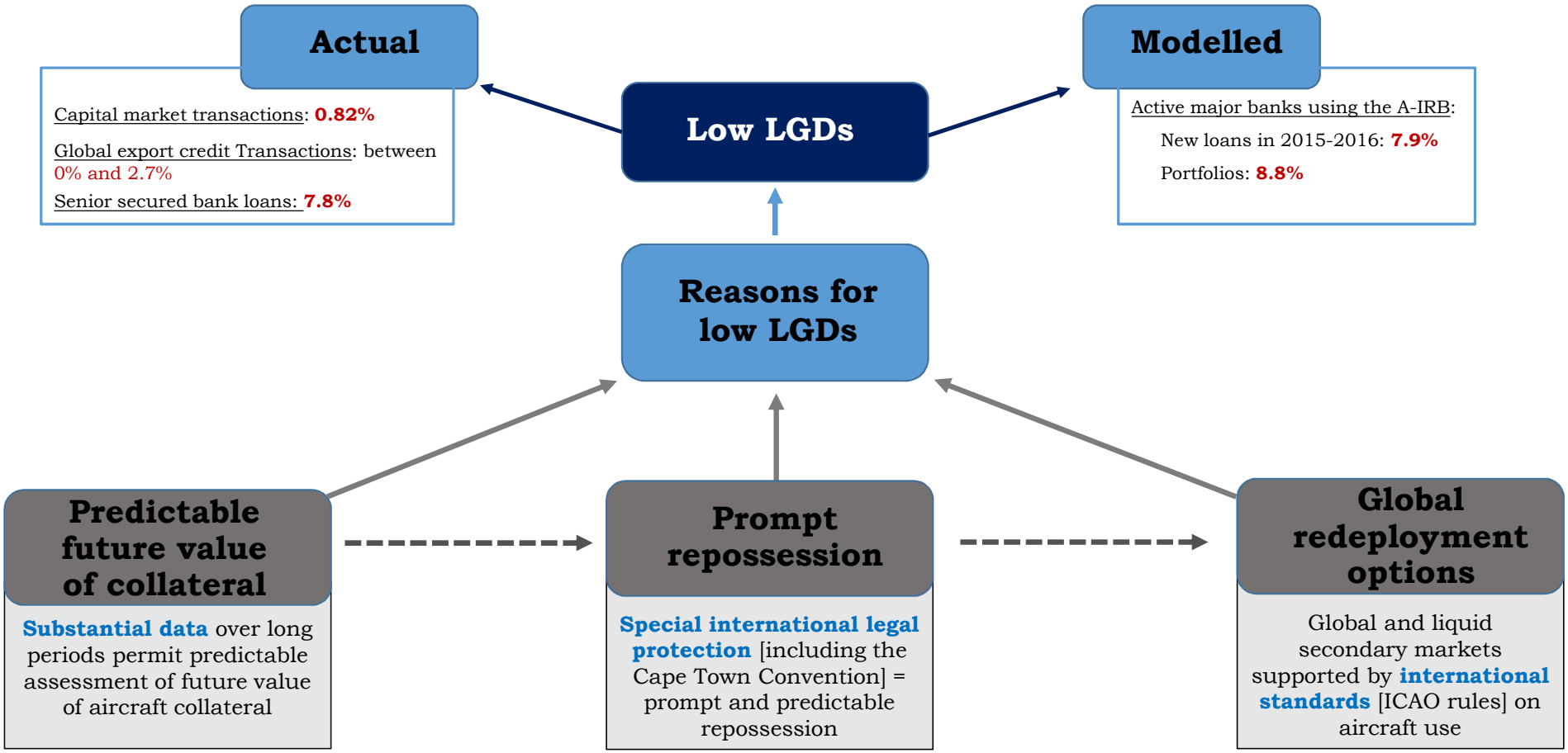
Unique features and data supporting low LGDs for aircraft-backed loans



Predictable future value of collateral

1. Unlike many asset classes, there is substantial data, collected over a long period of time, permitting predictable assessment of future value of aircraft collateral.

2. That predictable future value data includes valuations made, assessed and regularly revised by experts with large volumes of point in time, mark-to-market type information and over time information, viewing aircraft collateral through economic cycles.

3. That predictable future data has been substantiated in the actual LGDs (figures noted on the previous chart), and taken into account and endorsed after close scrutiny by national regulators in the context of reviewing internal models.

4. Aircraft financing has conservative financing structures, as evidenced in the actual LGDs (figures noted on the previous chart). Such structuring includes conservative LTVs, amortisation profiles, and durations (which, in light of predictable residual values, facilitate loss-avoiding restructuring possibilities, as needed), and other collateral enhancing provisions.

Prompt repossession

1. Prompt and predictable repossession are key elements of aircraft-backed loans.

2. In most jurisdictions, there are special and enhanced laws which facilitate repossession. In particular, the Cape Town Convention (CTC) is in force in 65 countries for aircraft-backed loans. The number of countries is growing. A substantial majority of the world's aircraft transactions are already covered by CTC.

3. CTC is a best practice based treaty – an international *lex specialis* – that is specifically designed to enhance the clarity, predictability, and timeliness of repossession, including and most importantly in bankruptcy. Specific timetables are provided, subject to a declaration by countries. CTC materially enhances the strong security packages for aircraft-backed loans developed and tested over many years.

4. As a treaty, CTC also helps address political and sovereign risk, by substantially increasing the costs of non-compliance. This is reinforced by a specific cross-reference in the OECD's aircraft sector understanding which links export credit pricing to implementation of, and compliance, with CTC.

Global redeployment options

1. Among major asset classes, aircraft-backed loans benefits from one of the largest, and most diverse and geographically distributed pool of users of the subject collateral. Markets for such collateral are active, global and liquid, providing hedges against national, regional, and other localised disruptions or restrictions.

2. Such global and liquid markets will only expand over time, as air transport services continue to expand by all metrics. The highly credible and regularly revised market forecasts of the major manufacturers provide transparent details about such expanding markets.

3. One reason for such global and liquid markets is the existence of international standards for the transfer, re-deployment, and use of aircraft around the world by the International Civil Aviation Organization (ICAO), a United Nations specialised agency. As with the legal protections afforded by CTC, the international standards issued by ICAO provide a global, internationalised regime that warrant enhanced recognition of the use and value of aircraft collateral.

Aviation Working Group's Basel Data Exercise: Regulatory Capital Treatment of Aircraft Backed Loans

Vadim Linetsky, Ph.D., Professor, Northwestern University,
Independent Technical Advisor, AWG

This article reproduces the original study document "Regulatory Capital Treatment of Aircraft Backed Loans: Basel Data Exercise" that can be found at www.awg.aero. No further changes other than reformatting have been made to the original document.

STUDY BACKGROUND

This study seeks to assess the impact of the Basel Committee on Banking Supervision (BCBS) proposals "Revisions to the Standardised Approach for credit risk" of December 2015 and "Reducing variation in credit risk-weighted assets – constraints on the use of internal model approaches" of March 2016 on secured aircraft lending.

- Secured aircraft loans are generally treated either as specialized lending (object finance) or as corporate exposures, depending on transactional features.
- BCBS Proposals for Specialized Lending: BCBS Consultative Document "Reducing variation in credit risk-weighted assets – constraints on the use of internal model approaches" proposes to remove the Internal Ratings Based (IRB) approaches for specialized lending, leaving only the Standardised Approach (SA) and supervisor slotting. BCBS Consultative Document "Revisions to the Standardised Approach for credit risk" proposes to increase risk weights (RW) for specialized lending to 120%. Supervisory slotting approach is based on a grid with five categories with prescribed

RW: Category 1 (Strong) 70% RW, Category 2 (Good) 90%, Category 3 (Satisfactory) 115% RW, Category 4 (Weak) 250% RW, Category 5 (Default) write off 50% of the outstanding loan amount (RW figures are for maturities greater than 2.5 years typical of aircraft lending). Assignments of loans to slots are approved by the bank's supervisory regulator.

- BCBS Proposals for Corporate Exposures: Under the proposal "Reducing variation in credit risk-weighted assets – constraints on the use of internal model approaches", corporate exposures are classified as follows:

- Corporates with >EUR50bn total group assets: remove the IRB approaches, leaving only the SA.
- Corporates with <EUR50bn group assets but >EUR200mn revenues: remove the Advanced IRB (A-IRB) approach, leaving the Foundation IRB (F-IRB).
- Corporates with <EUR200mn revenues: introduce 20% LGD floor in the A-IRB approach.
- Most major airlines fall into the middle category.
- To assess the impact of these proposals on risk weighting secured aircraft loans and resulting changes in regulatory capital required to support secured aircraft lending, Dr. Linetsky undertook the AWG Basel Data Exercise (BDE) on behalf of the Aviation Working Group. This study presents the findings from the BDE.

EXECUTIVE SUMMARY

Historical LGDs in the aircraft sector: Aircraft backed financings historically realized strong recoveries and low LGDs.

Capital markets: According to Kroll data, historical LGD for all EETC A and B tranches combined (A+B LTV comparable to bank loans) is 0.82% (Kroll EETC recovery data are undiscounted.)

Export credit agency (ECA) portfolios: Historical LGD for US Exim Bank portfolio is 0%. Historical LGD for Export Development Canada (EDC) and Brazilian Development Bank (BNDES) is 2.7%. (Data aggregated for 2 agencies. ECA recovery data undiscounted.)

Bank loans: historical average senior secured aircraft bank loan LGD is 7.8%. (Based on Global Credit Data, recoveries discounted at Euribor.)

- AWG Basel Data Exercise (BDE): Seven (7) global banks, that are major providers of aircraft-backed loans in 2015-2016 and which currently use A-IRB approaches, returned confidential AWG BDE questionnaires. These banks, collectively, have a substantial market share of such loans, and, thus, are representative of currently active banks in this field using A-IRB. BDE results:

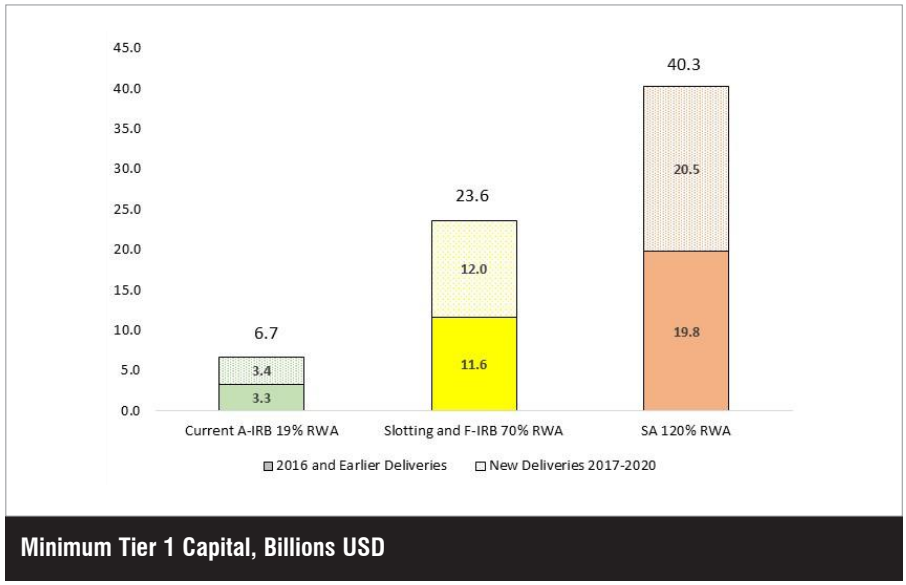
- For aircraft loans newly funded in 2015-2016: average A-IRB LGD: 7.9%, average RWA: 19.0%.
- For aggregate aircraft loan portfolio of the banks: average A-IRB LGD: 8.8%, average RWA: 19.7%.
- The anticipated impact of the BCBS proposals on capital requirements in the aircraft sector is a x3.5

to x6 increase in Tier 1 capital requirements on secured aircraft loans. If implemented, this would require the banking industry to raise $17bn to $34bn in new Tier 1 capital to support the existing aircraft loan banking books and sustain the bank market share in new aircraft delivery financing in 2017-2020.

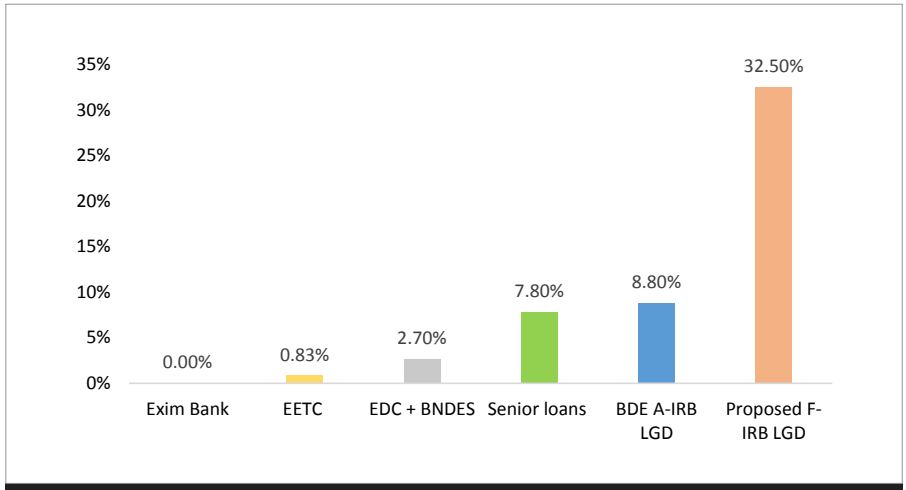
- Impact on availability of bank financing and risk profile in the aircraft sector: By not recognizing the historically low risk of aircraft collateral, the BCBS proposals put secured aircraft loans at a drastic risk-return profile disadvantage relative to higher risk unsecured corporate loans and secured loans with other types of collateral that historically realized higher LGDs.

Within the aircraft sector, the BCBS proposals put lower risk aircraft loans at a disadvantage relative to higher risk loans (e.g. low LTV vs. high LTV loans). According to the BDE respondents, consequences will likely include:

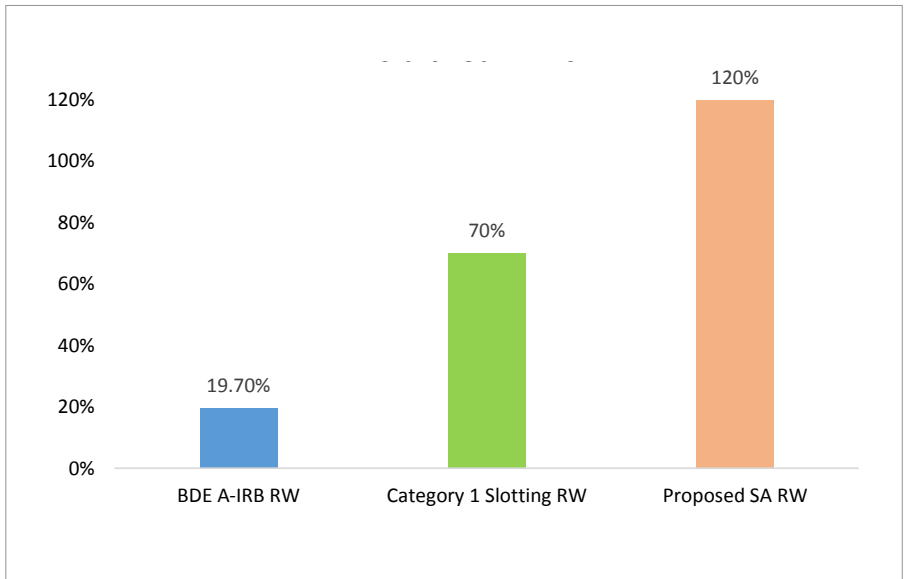
- Reduced capital availability to secured aircraft lending.
- Reduce size of low risk aircraft loan portfolios on banking books via possible asset sales, undermining the long term partner role played by banks aligned with their airline customers.
- Overall increase in bank portfolio risk through re-allocating capital away from secured aircraft lending towards riskier unsecured lending and riskier types of collateral.
- Some aircraft financing may shift towards unregulated shadow banking entities.
- Remaining secured aircraft financing in banks may shift to riskier terms and borrowers to capture higher margins to compensate for increased regulatory capital costs that are made essentially risk-insensitive by the current BCBS proposals.



Minimum Tier 1 Capital, Billions USD



Aircraft LGDs



Aircraft Loan RWs

IMPACT OF THE BCBS PROPOSALS ON TIER 1 CAPITAL SUPPORTING AIRCRAFT LOAN BANKING BOOKS

The summary chart shows our estimates of minimum Basel III Tier 1 capital required to support secured aircraft loans financing 2016 and earlier aircraft deliveries and projected new deliveries in 2017-2020 under three scenarios: 1) current A-IRB average 19.7% RWA for seasoned loan portfolios / 19% for new deliveries, 2) 70% RWA for supervisory slotting for specialized lending and (approximately similar) F-IRB for corporate lending, and 3) 120% RWA under SA for specialized lending. (Details on pages 10 and 11.)

AIRCRAFT FINANCING LGDS

The summary chart shows historical Exim bank LGD (details page 15), EDC and BNDES LGD (p.15), EETC combined A and B tranche LGD (p.14), historical senior secured loan LGD (p.16), BDE A-IRB LGD (p.8), and the proposed F-IRB LGD for an 80% LTV aircraft loan with 50% collateral value haircut and 25% LGD for secured portion and 45% LGD for unsecured portion (p.9).

AIRCRAFT LOAN RWS

The summary chart shows BDE A-IRB RWs (details page 8), Category 1 Slotting RW of 70%, and proposed SA RW 120% for specialized lending (p.9).

I. AWG BASEL DATA EXERCISE

AWG BASEL DATA EXERCISE

- Seven (7) global banks, that are major providers of aircraft-backed loans in 2015-2016 and which currently use A-IRB approaches, returned confidential AWG BDE questionnaires. These banks, collectively, have a substantial market share of such loans, and, thus, are representative of currently active banks in this field using such approaches.
- AWG BDE questionnaire was intended to establish average LGD and RWA for first priority aircraft-backed loans currently in use by banks in their regulator-approved A-IRB calculations. It asked for average figures for aircraft-backed loans funded during the 2015-2016 period, as well as for the bank's entire portfolio of aircraft-backed loans.
- The majority of respondents are Global Systemically Important Banks (G-SIBs).

AWG BDE RESULTS	
Average Portfolio LGD	8.8%
Average Portfolio RWA	19.7%
Average LGD 2015-6	7.9%
Average RWA 2015-6	19.0%

APPLICATION OF THE BCBS PROPOSALS ON BANK REGULATORY CAPITAL TO SECURED AIRCRAFT LOANS

- To assess the impact of the proposals on those aircraft loans treated as specialized lending, we consider two scenarios: increase in RW from the current average RW of 19.7% for seasoned portfolios and 19% for loans funded in 2015-2016 to the 70% RW under the supervisory slotting approach for Category 1 (the minimum RW available to specialized lending under the current proposal) and 120% RW under SA.
- For those aircraft loans treated as corporate exposures, since most major airlines fall in the middle category with assets <EUR50bn and revenues >EUR200mn, we consider F-IRB with 25% LGD for secured portion and 45% for unsecured portion, as prescribed by F-IRB. BCBS Consultative Document "Reducing variation" prescribes a 50% haircut on the collateral value. Example calculation for an aircraft secured loan with 80% LTV: F-IRB LGD = 25% * 50/80 + 45% * 30/80 = 32.5%.
- Using average portfolio LGDs and RWAs collected in the AWG BDE and the linear relationship between LGD and RWA via the IRB formula, this corresponds to approximately 73% RW on average for aircraft portfolios of respondents to the AWG BDE. Based on these data, on average, the impact of the F-IRB approach with proposed 50% collateral haircut and LGDs of 25% for secured and 45% for unsecured portions of the aircraft loan after the haircut would have a similar impact to supervisory slotting for Category 1 with 70% RW, assuming LTV of 80%.
- Based on these considerations, in our analysis of the impact of the proposals we use the range of 70% (minimum) to 120% (maximum) RW.

BCBS PROPOSALS ON BANK REGULATORY CAPITAL: IMPACT ON SEASONED AIRCRAFT LOAN PORTFOLIO

- To estimate the aggregate size of the seasoned aircraft loan portfolio on the banking books as of the end of 2016, the following data and assumptions were used:
  - Aggregate new aircraft delivery figures in USD for 2009-2016 supplied by Airbus, ATR, Boeing, Bombardier and Embraer.
  - Percentage share of bank financing for deliveries in each year 2009-2016 supplied by Airbus, ATR, Boeing, Bombardier and Embraer.
  - 10% per year principal amortization was assumed.
  - Due to data availability, the figures do not include refinancings of previously delivered aircraft due to lack of data. Only new delivery financing included in the estimate.
  - Loans supported by export credit guarantees are excluded from the study.
- Based on this approach, estimated size of the aircraft loan portfolio on

MINIMUM TIER 1 CAPITAL (AT 10%) TO SUPPORT USD 165BN SECURED AIRCRAFT LOAN PORTFOLIO			
	Tier 1 Capital	Increase, USD	Increase, x
Current average: 19.7% RWA	USD 3.3bn		
70% RWA	USD 11.6bn	USD 8.3bn	x 3.5
120% RWA	USD 19.8bn	USD 16.5bn	x 6

the banking books as of the end of 2016 is approximately USD 165bn. This figure is likely understated due to not including refinancings of previously delivered aircraft.

- To estimate the amount of additional Tier 1 capital required to support the seasoned loan portfolio, the following assumptions were made:
  - The portfolio average RWA of 19.7% in the AWG BDE exercise is used as the base to assess anticipated increases in capital requirements.
  - 10% Tier 1 Capital = 6% Basel III minimum Tier 1 capital + 2.5% Basel III conservation buffer + 1.5% additional G-SIB Tier 1 capital (majority of respondents to AWG BDE are G-SIBs).
  - Considered increases to 70% and 120% RWA (as discussed on page 9).
- Based on these assumptions, the BCBS proposals will result in net increases in regulatory capital of between x3.5 and x6 and will require the banking industry to raise between $8.3bn to $16.3bn in new Tier 1 capital to support existing banking books that financed 2016 and earlier aircraft deliveries (new deliveries only, not counting refinancings).

BCBS PROPOSALS ON BANK REGULATORY CAPITAL: IMPACT ON NEW AIRCRAFT DELIVERIES IN 2017-2020

- To estimate bank financing share of new aircraft deliveries in 2017-2020, the following assumptions were made:
  - Projected new aircraft deliveries in USD for 2017-2020 supplied by Airbus, ATR, Boeing, Bombardier and Embraer.
  - Assumed bank financing share in 2017-2020 remains at the 2016 levels for each manufacturer.
- Based on this approach, projected bank share of the aircraft financing market in 2017-2020 is estimated at approximately USD 177bn. This figure includes Airbus, ATR, Boeing, Bombardier and Embraer aircraft.
- To estimate the amount of additional Tier 1 capital required to support new deliveries, the following assumptions were made:
  - The 2015-2016 transaction average RWA of 19% in the AWG BDE exercise used as the base to assess anticipated increases in capital requirements for new deliveries in 2017-2020.
  - 10% Tier 1 Capital = 6% Basel III minimum Tier 1 capital + 2.5% Basel III conservation buffer + 1.5% additional G-SIB Tier 1 capital (majority of respondents to AWG BDE are G-SIBs).
  - Considered increases to 70% and 120% RWA (as discussed on page 7).
- The BCBS proposals will result in net increases in regulatory capital of between x3.5 and x6 and will require the banking industry to raise between $8.6bn to $17.1bn in new equity in order to maintain the 2016 banking industry market share in financing new aircraft deliveries in 2017-2020.

MINIMUM TIER 1 CAPITAL (AT 10%) TO SUPPORT USD 177BN IN NEW AIRCRAFT FINANCING

	Tier 1 Capital	Increase, USD	Increase, x
Current average: 19% RWA	USD 3.4bn		
70% RWA	USD 12.0bn	USD 8.6bn	x 3.5
120% RWA	USD 20.5bn	USD 17.1bn	x 6

ADVERSE CONSEQUENCES OF THE BCBS PROPOSALS ON THE AIRCRAFT SECTOR

- While the stated intent of the BCBS's proposals is reduction in variation in RWAs across different financial institutions, rather than material net increases in regulatory capital requirements across the banking industry, the impact on the aircraft sector specifically is a drastic x3.5 to x6 increase in capital requirements on secured aircraft loans that, if implemented, would require the banking industry to raise $17bn to $34bn in new equity to support the existing aircraft loan banking books and sustain the current bank market share in new aircraft delivery financing in 2017-2020.
- In addition to the net increases in regulatory capital to the aircraft sector, the proposals are insensitive to the risk spectrum within the aircraft sector. LGDs on aircraft loans strongly depend on transaction characteristics (age of aircraft and aircraft type, LTV, maturity, amortization profile), in addition to legal jurisdiction.
- AWG BDE respondents indicated that outcomes of the proposed drastic increases in capital requirements for secured aircraft financing will range from some of the institutions considering exiting the secured aircraft financing market entirely due to disproportionate increases in capital requirements relative to other sectors, while some of the institutions considering reducing the size of existing aircraft books via possible asset sales and scaling back new financings.
- By not recognizing the historically low risk of aircraft collateral, the BCBS proposals put secured aircraft loans at a drastic risk-return profile disadvantage relative to higher risk unsecured corporate loans and secured loans with other types of collateral that historically realized higher LGDs. Within the aircraft sector, the BCBS proposals put lower risk aircraft loans at a disadvantage relative to higher risk loans (e.g. low LTV vs. high LTV loans). According to the BDE respondents, consequences will likely include:
  - Reduced capital availability to secured aircraft lending.
  - Reduce size of low risk aircraft loan portfolios on banking books via possible asset sales, undermining the long term partner role

played by banks aligned with their airline customers.
- Overall increase in bank portfolio risk through re-allocating capital away from secured aircraft lending towards riskier unsecured lending and riskier types of collateral.
- Some aircraft financing may shift towards unregulated shadow banking entities that are possibly less concerned with the long-term health of the aviation industry.
- Remaining secured aircraft financing in banks may shift to riskier terms and borrowers to capture higher margins to compensate for increased regulatory capital costs that are made essentially risk-insensitive by the current BCBS proposals.

II. HISTORICAL LGDS IN AIRCRAFT FINANCE

CAPITAL MARKETS: EETC LGDS

- Since mid-90s enhanced equipment trust certificates (EETC) have become the common form of aircraft-secured capital markets debt financing for airlines.
- Kroll Bond Rating Agency ("EETC historical recoveries and current outlook", September 2015) conducted a comprehensive study into EETC recoveries in bankruptcy during the 20 year period 1994-2014.
- Typical bank loan LTVs are broadly comparable to B tranche LTVs (A tranche LTVs are generally lower than bank loan LTVs, C tranche LTVs are generally higher). This study uses combined A and B tranche EETC financing as proxy for bank loans.
- $19.3bn in face value of combined A and B tranches issued by US airlines went through bankruptcy proceedings during 1994-2014 period. Aggregate losses on this issuance totaled $162mn during this period, for an LGD of 0.84% - exceptionally low historical loss rates, considering that this historical period included high-stress periods for the airline industry (airline industry downturn following the 9/11 terrorist attacks, high jet fuel costs of 2006-2008, and the financial crisis of 2008 and the subsequent recession).
- EETC recoveries in Kroll study are undiscounted recoveries.

LOSS AND RECOVERY RATES FOR EETCS IN BANKRUPTCY 1994-2014

Tranche	Total loss (mn)	Original Face (mn)	LGD	Recovery*
A	$ 35	$ 16,000	0.20%	99.80%
B	$ 127	$ 3,300	3.90%	96.10%
A + B	$ 162	$ 19,300	0.84%	99.16%

EXPORT CREDIT AGENCY LGDS

- Export Credit Agencies (ECAs) support aircraft exports either via pure cover guarantees or direct lending. Typical terms of aircraft-backed loans supported by ECAs are 10 or 12 year maturity with full amortization and with LTV ranging from 70% to 85%, depending on the credit rating of the borrower and the corresponding risk mitigants (see OECD Aircraft Sector Understanding (ASU) documentation at http://www.oecd.org/tad/xcred/aircraftsectorunderstandings.htm).
- Exim Bank Portfolio Experience: Between October 1993 and June 2016 Export-Import Bank of the United States guaranteed export credits for $106,317 million in aircraft financing to over 200 borrowers in 68 countries. Total claims on defaulted financing paid during this period amounted to $624 million. Total recoveries amounted to $814 million. Total recovery expenses amounted to $7 million, resulting in no net loss to Exim (recoveries exceeded claims plus expenses) and effective historical LGD of 0%. Data source: Exim Bank.
- Export Development Canada (EDC) and Brazilian Development Bank (BNDES) Portfolio Experience: Between 1996 and 2016 EDC and BNDES supported approximately $56 billion (combined) of aircraft exports in the form of direct lending. Defaults during this period totaled approximately $9.2 billion (aggregated for the two agencies). Total losses amounted to approximately $249 million with historical LGD of 2.7%. EDC financed in approximately 44 countries. BNDES financed in approximately 27 countries. Data sources: EDC and BNDES.
- Note: ECA recovery data are undiscounted recoveries.
- While until recently EETCs were primarily issued by US airlines, Exim, EDC and BNDES portfolios are highly diversified across jurisdictions. The mid-90s to 2016 historical period for the ECA portfolios coincided with the historical period for the EETC market and included high-stress periods for the airline industry (airline industry downturn following the 9/11 terrorist attacks, high jet fuel costs of 2006-2008, and the financial crisis of 2008 and the subsequent recession).

HISTORICAL BANK LOAN LGDS: GLOBAL CREDIT DATA STUDY

- For the purpose of this study Natixis has provided to Prof. Linetsky an extract of the Global Credit Data (GCD) data on aircraft loans (which is a sub-sample of the GCD database available to Natixis as GCD member and may not be the same as the whole GCD database). It contains data on all aircraft loans that experienced a default event during the period from 2000 to 2013 and which were resolved by the time of the data extraction and were reported to the GCD by the GCD member banks. In our study we excluded unsecured loans and subordinated loans. After these filters, 960 senior secured loans that experienced a default event during 2000- 2013 were included in our analysis. We computed the (unweighted) average of LGDs in

this loan data set (using uncapped and Euribor-discounted recovery data in the GCD data set).

- The average senior aircraft-secured bank loan LGD is 7.8%. The median LGD is 1.3%.
- We note that this LGD is higher than ECA and EETC LGDs likely due to the fact that virtually all ECA transactions and majority of EETC transactions are collateralized by new aircraft deliveries, while the GCD data include older aircraft collateral, as well as possible differences in terms and conditions. We also note that the current ECA practice is to include cross-default and cross-collateral provisions (as per the ASU). Historical losses in ECA portfolios may also be lower due to this factor.

HISTORICAL BANK LOAN LGDS: GLOBAL CREDIT DATA STUDY CONTINUED

- We note the difference with the LGD of 11% reported in IIF and AFME submissions to the BCBS based on the GCD data. The differences are due to the following methodological differences: 1) we removed junior loans from the data set, as our study focused on senior aircraft-secured loans only, while the GCD study included both senior and junior secured loans. 2) We did not apply caps to recoveries or LGD. 3) Our average was computed as simple average at the loan level (average LGD for all loans in the data set). The GCD calculation followed a different methodology. It first aggregated recoveries on all loans to the same entity and then divided by the aggregate exposure on all loans to the same entity. The results were then averaged across entities to arrive at the average entity-level LGD across entities. The average LGD in our study is across loans, rather than entities. We thank the GCD for explaining their calculation methodology.
- The IIF and AFME submissions added an additional 5% to the base historical LGD figure of 11% to account for discounting of recovery from resolution back to default event date at the loan rate that includes margin vs. the raw GCD data that include discounting at Euribor. Since no data on loan margins were available in the data extraction we examined and we could not confirm whether all recoveries reported in the data set included accrued loan interest to the default resolution date in cases where such accrued interests were received, we could not confirm the 5% discounting figure. Hypothetically, if we add the 5% figure to our base 7.8% LGD, we arrive at the discounted LGD of 12.8% vs. 16% reported in IIF and AFME submissions.

COMPARISON OF AWG BDE FIGURES WITH HISTORICAL FIGURES

- To compare these historical LGD figures with the average reported A-IRB LGD of 8.8% in the AWG BDE, we note that these figures are of a different nature.
- The average 8.8% A-IRB LGD in the current bank portfolios represents banks' modeled stressed LGDs for the current portfolio, also taking into account the bank's historical data. Current portfolios may have a significantly different risk profile that the historical data in the GCD database, such as aircraft age and type, loan LTV, maturity and amortization profile, and borrower PDs. Since the financial crisis of 2007-2008, banks have worked to reduce portfolio risk. It is likely that the current bank portfolio risk profiles are lower than the risk profile in the historical data during the 2000-2013 period.
- Additionally, the groups of banks in the AWG BDE and in the GCD are not the same (while some of the banks participated in both data collection exercises, some participated in only BDE or only GCD).
- We also note that secured aircraft loan LGDs are generally low due to the residual life of the aircraft which enables lenders to restructure the loan with the same operator or re-position the aircraft with another operator, thus avoiding sale of the aircraft in unfavorable market environments.

COMPARISON OF AWG BDE FIGURES WITH HISTORICAL FIGURES

- We further note that the AFME submission translated the LGD of 16% into RW of 55% using historical observed default frequency in the GCD database as the PD input into the A-IRB RW formula.
- We note that the corresponding translation of LGD into RW using the data collected in the BDE on current bank portfolios results in a materially lower RW of 36% corresponding to 16% LGD (and RW of 29% corresponding to 12.8% LGD). The difference is likely accounted for by the higher PD in the historical data vs. current bank portfolios due to higher risk profiles in the historical data, as discussed above.
- Table below summarizes translation of LGD into RW using the current average bank portfolio data collected in the BDE.

LGD	RW
7.8%	17.5%
8.8%	19.7%
12.8%	28.7%
16.0%	35.8%

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Regulatory Capital Treatment of Aircraft Backed Loans: Basel Data Exercise*

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14 October 2016

*__Disclaimer__: Any opinions, findings, conclusions or recommendations expressed in this material are those of the author, Prof. Linetsky, expressed in his private individual capacity, do not necessarily reflect the views of the AWG or its individual members, Northwestern University, or any other 3rd parties, and are based on research and analysis completed to date and subject to change as additional data become available. No warranty or liability of any kind is assumed.

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  - Corporates with <EUR200mn revenues: introduce 20% LGD floor in the A-IRB approach.

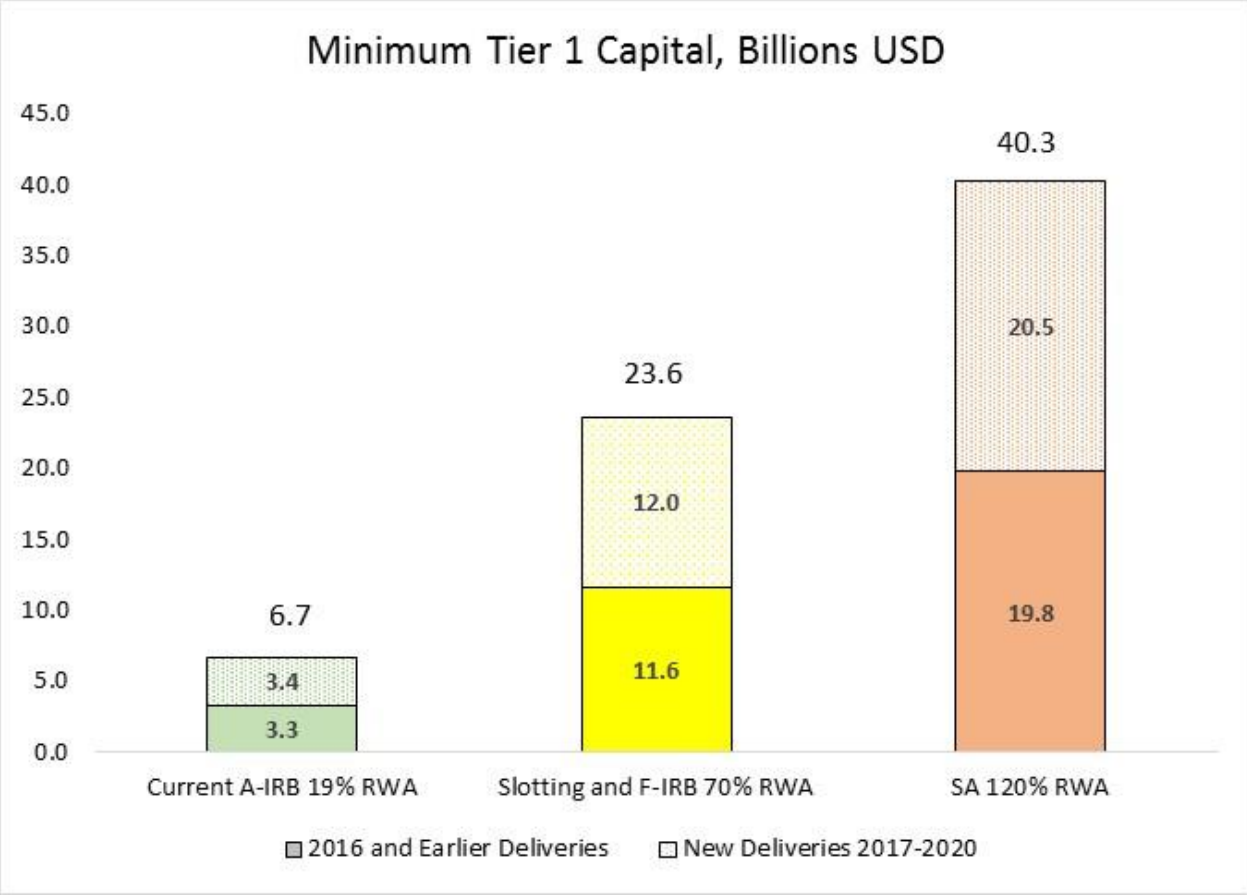
  Most major airlines fall into the middle category.
- To assess the impact of these proposals on risk weighting secured aircraft loans and resulting changes in regulatory capital required to support secured aircraft lending, Dr. Linetsky undertook the **AWG Basel Data Exercise** (BDE) on behalf of the Aviation Working Group. This study presents the findings from the BDE.

Executive Summary

- Historical LGDs in the aircraft sector: Aircraft backed financings historically realized strong recoveries and low LGDs.
  - Capital markets: According to Kroll data, historical LGD for all EETC A and B tranches combined (A+B LTV comparable to bank loans) is **0.82%** (Kroll EETC recovery data are undiscounted.)
  - Export credit agency (ECA) portfolios: Historical LGD for US Exim Bank portfolio is **0%**. Historical LGD for Export Development Canada (EDC) and Brazilian Development Bank (BNDES) is **2.7%**. (Data aggregated for 2 agencies. ECA recovery data undiscounted.)
  - Bank loans: historical average senior secured aircraft bank loan LGD is **7.8%**. (Based on Global Credit Data, recoveries discounted at Euribor.)
- AWG Basel Data Exercise (BDE): Seven (7) global banks, that are major providers of aircraft-backed loans in 2015-2016 and which currently use A-IRB approaches, returned confidential AWG BDE questionnaires. These banks, collectively, have a substantial market share of such loans, and, thus, are representative of currently active banks in this field using A-IRB. BDE results:
  - For aircraft loans newly funded in 2015-2016: average A-IRB LGD: 7.9%, average RWA: 19.0%.
  - For aggregate aircraft loan portfolio of the banks: average A-IRB LGD: 8.8%, average RWA: 19.7%.
- The anticipated impact of the BCBS proposals on capital requirements in the aircraft sector is a x3.5 to x6 increase in Tier 1 capital requirements on secured aircraft loans. If implemented, this would require the banking industry to raise $17bn to $34bn in new Tier 1 capital to support the existing aircraft loan banking books and sustain the bank market share in new aircraft delivery financing in 2017-2020.
- Impact on availability of bank financing and risk profile in the aircraft sector: By not recognizing the historically low risk of aircraft collateral, the BCBS proposals put secured aircraft loans at a drastic risk-return profile disadvantage relative to higher risk unsecured corporate loans and secured loans with other types of collateral that historically realized higher LGDs. Within the aircraft sector, the BCBS proposals put lower risk aircraft loans at a disadvantage relative to higher risk loans (e.g. low LTV vs. high LTV loans). According to the BDE respondents, consequences will likely include:
  - Reduced capital availability to secured aircraft lending.
  - Reduce size of low risk aircraft loan portfolios on banking books via possible asset sales, undermining the long term partner role played by banks aligned with their airline customers.
  - Overall increase in bank portfolio risk through re-allocating capital away from secured aircraft lending towards riskier unsecured lending and riskier types of collateral.
  - Some aircraft financing may shift towards unregulated shadow banking entities.
  - Remaining secured aircraft financing in banks may shift to riskier terms and borrowers to capture higher margins to compensate for increased regulatory capital costs that are made essentially risk-insensitive by the current BCBS proposals.

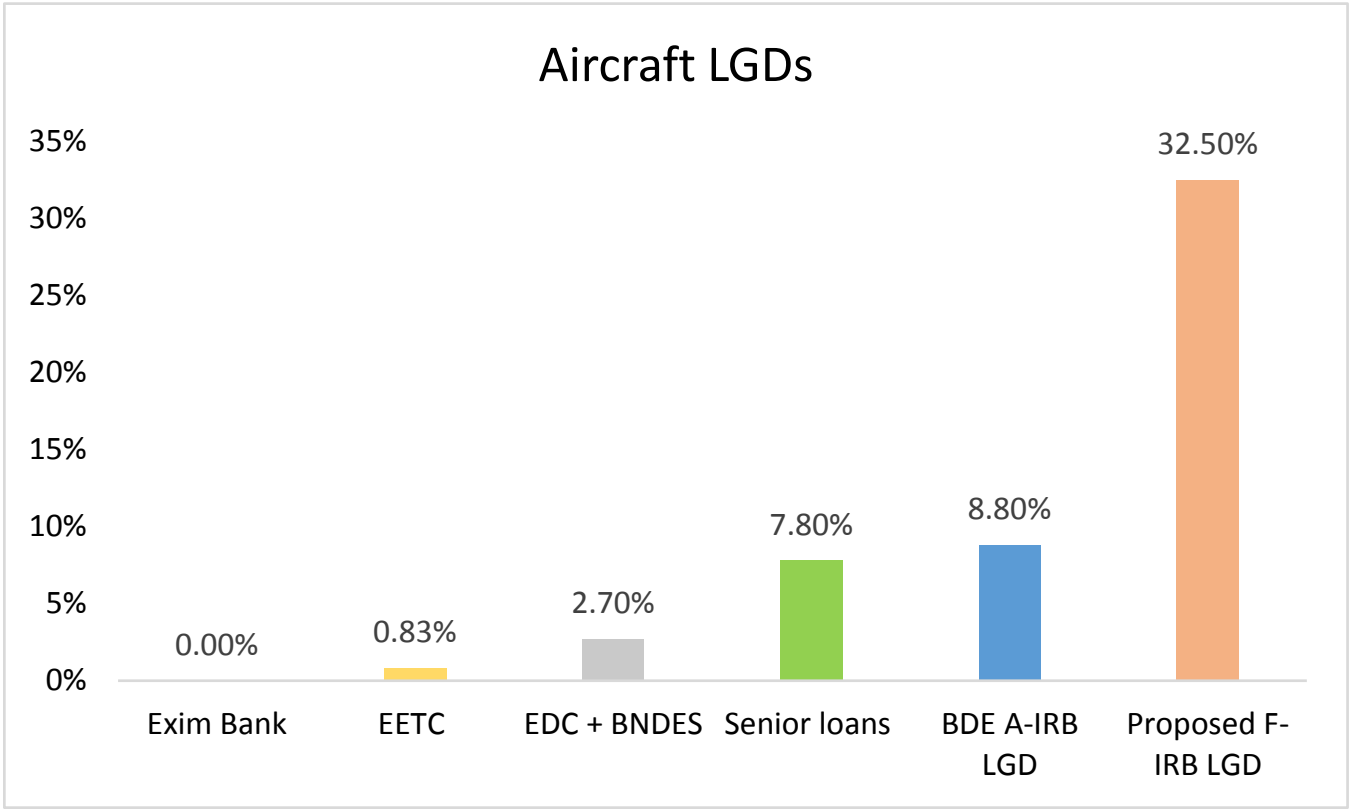
Impact of the BCBS Proposals on Tier 1 Capital Supporting Aircraft Loan Banking Books

The summary chart shows our estimates of minimum Basel III Tier 1 capital required to support secured aircraft loans financing 2016 and earlier aircraft deliveries and projected new deliveries in 2017-2020 under three scenarios: 1) current A-IRB average 19.7% RWA for seasoned loan portfolios / 19% for new deliveries, 2) 70% RWA for supervisory slotting for specialized lending and (approximately similar) F-IRB for corporate lending, and 3) 120% RWA under SA for specialized lending. (Details on pages 10 and 11.)



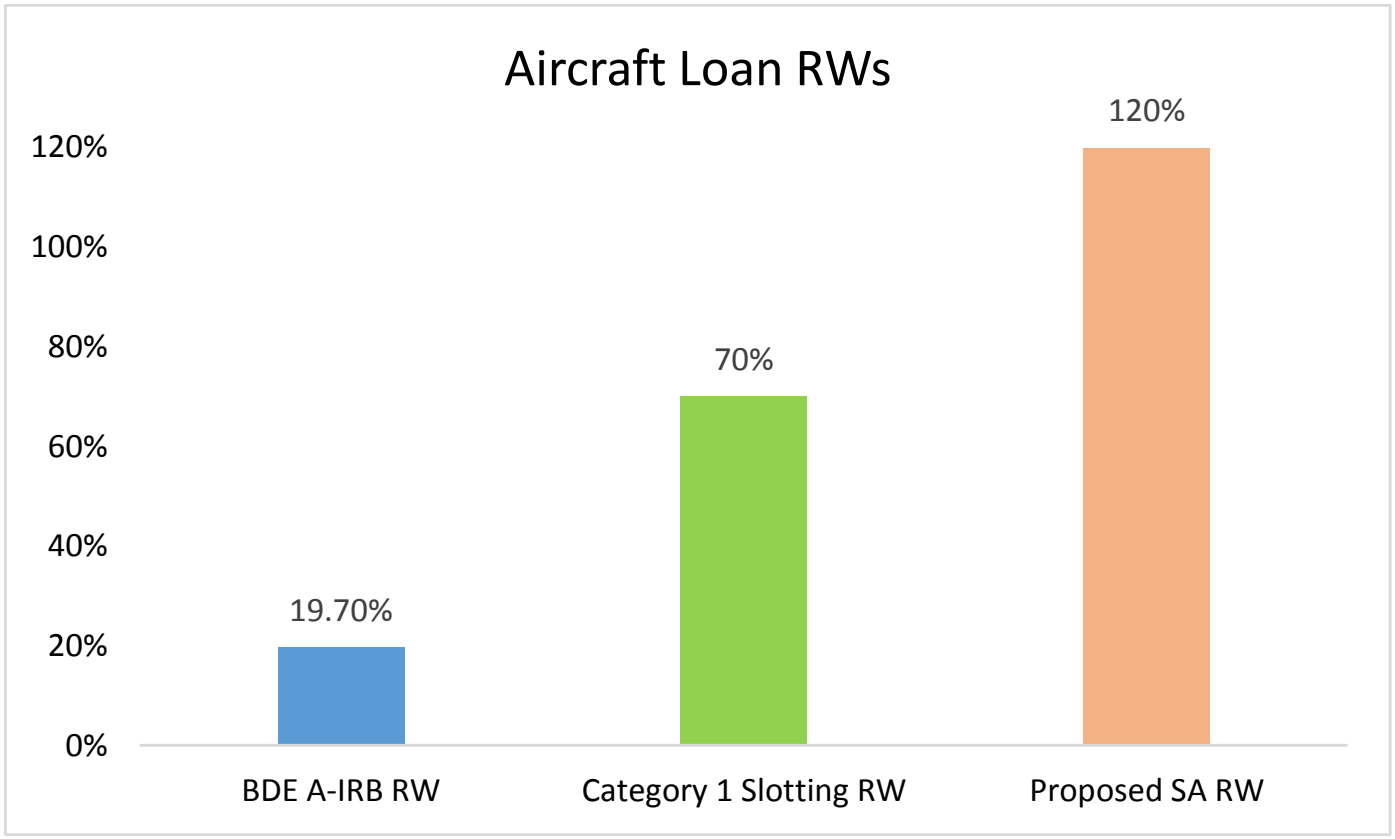
Aircraft Financing LGDs

The summary chart shows historical Exim bank LGD (details page 15), EDC and BNDES LGD (p.15), EETC combined A and B tranche LGD (p.14), historical senior secured loan LGD (p.16), BDE A-IRB LGD (p.8), and the proposed F-IRB LGD for an 80% LTV aircraft loan with 50% collateral value haircut and 25% LGD for secured portion and 45% LGD for unsecured portion (p.9).



Aircraft Loan RWs

The summary chart shows BDE A-IRB RWs (details page 8), Category 1 Slotting RW of 70%, and proposed SA RW 120% for specialized lending (p.9).



I. AWG Basel Data Exercise

AWG Basel Data Exercise

- Seven (7) global banks, that are major providers of aircraft-backed loans in 2015-2016 and which currently use A-IRB approaches, returned confidential AWG BDE questionnaires. These banks, collectively, have a substantial market share of such loans, and, thus, are representative of currently active banks in this field using such approaches.
- AWG BDE questionnaire was intended to establish average LGD and RWA for first priority aircraft-backed loans currently in use by banks in their regulator-approved A-IRB calculations. It asked for average figures for aircraft-backed loans funded during the 2015-2016 period, as well as for the bank's entire portfolio of aircraft-backed loans.
- The majority of respondents are Global Systemically Important Banks (G-SIBs).

AWG BDE Results	
Average Portfolio LGD	8.8%
Average Portfolio RWA	19.7%
Average LGD 2015-6	7.9%
Average RWA 2015-6	19.0%

Application of the BCBS Proposals on Bank Regulatory Capital to Secured Aircraft Loans

- To assess the impact of the proposals on those aircraft loans treated as specialized lending, we consider two scenarios: increase in RW from the current average RW of 19.7% for seasoned portfolios and 19% for loans funded in 2015-2016 to the 70% RW under the supervisory slotting approach for Category 1 (the minimum RW available to specialized lending under the current proposal) and 120% RW under SA.
- For those aircraft loans treated as corporate exposures, since most major airlines fall in the middle category with assets <EUR50bn and revenues >EUR200mn, we consider F-IRB with 25% LGD for secured portion and 45% for unsecured portion, as prescribed by F-IRB. BCBS Consultative Document "Reducing variation" prescribes a 50% haircut on the collateral value. Example calculation for an aircraft secured loan with 80% LTV:

  F-IRB LGD = 25% * 50/80 + 45% * 30/80 = 32.5%.
- Using average portfolio LGDs and RWAs collected in the AWG BDE and the linear relationship between LGD and RWA via the IRB formula, this corresponds to approximately 73% RW on average for aircraft portfolios of respondents to the AWG BDE. Based on these data, on average, the impact of the F-IRB approach with proposed 50% collateral haircut and LGDs of 25% for secured and 45% for unsecured portions of the aircraft loan after the haircut would have a similar impact to supervisory slotting for Category 1 with 70% RW, assuming LTV of 80%.
- Based on these considerations, in our analysis of the impact of the proposals we use the range of 70% (minimum) to 120% (maximum) RW.

BCBS Proposals on Bank Regulatory Capital: Impact on Seasoned Aircraft Loan Portfolio

- To estimate the aggregate size of the seasoned aircraft loan portfolio on the banking books as of the end of 2016, the following data and assumptions were used:
  - Aggregate new aircraft delivery figures in USD for 2009-2016 supplied by Airbus, ATR, Boeing, Bombardier and Embraer.
  - Percentage share of bank financing for deliveries in each year 2009-2016 supplied by Airbus, ATR, Boeing, Bombardier and Embraer.
  - 10% per year principal amortization was assumed.
  - Due to data availability, the figures do not include refinancings of previously delivered aircraft due to lack of data. Only new delivery financing included in the estimate.
  - Loans supported by export credit guarantees are excluded from the study.
- Based on this approach, estimated size of the aircraft loan portfolio on the banking books as of the end of 2016 is approximately USD 165bn. This figure is likely understated due to not including refinancings of previously delivered aircraft.
- To estimate the amount of additional Tier 1 capital required to support the seasoned loan portfolio, the following assumptions were made:
  - The portfolio average RWA of 19.7% in the AWG BDE exercise is used as the base to assess anticipated increases in capital requirements.
  - 10% Tier 1 Capital = 6% Basel III minimum Tier 1 capital + 2.5% Basel III conservation buffer + 1.5% additional G-SIB Tier 1 capital (majority of respondents to AWG BDE are G-SIBs).
  - Considered increases to 70% and 120% RWA (as discussed on page 9).
- Based on these assumptions, the BCBS proposals will result in net increases in regulatory capital of between x3.5 and x6 and will require the banking industry to raise between $8.3bn to $16.3bn in new Tier 1 capital to support existing banking books that financed 2016 and earlier aircraft deliveries (new deliveries only, not counting refinancings).

Minimum Tier 1 Capital (at 10%) to support USD 165bn secured aircraft loan portfolio			
	Tier 1 Capital	Increase, USD	Increase, x
Current average: 19.7% RWA	USD 3.3bn		
70% RWA	USD 11.6bn	USD 8.3bn	x 3.5
120% RWA	USD 19.8bn	USD 16.5bn	x 6

BCBS Proposals on Bank Regulatory Capital: Impact on New Aircraft Deliveries in 2017-2020

- To estimate bank financing share of new aircraft deliveries in 2017-2020, the following assumptions were made:
  - Projected new aircraft deliveries in USD for 2017-2020 supplied by Airbus, ATR, Boeing, Bombardier and Embraer.
  - Assumed bank financing share in 2017-2020 remains at the 2016 levels for each manufacturer.
- Based on this approach, projected bank share of the aircraft financing market in 2017-2020 is estimated at approximately USD 177bn. This figure includes Airbus, ATR, Boeing, Bombardier and Embraer aircraft.
- To estimate the amount of additional Tier 1 capital required to support new deliveries, the following assumptions were made:
  - The 2015-2016 transaction average RWA of 19% in the AWG BDE exercise used as the base to assess anticipated increases in capital requirements for new deliveries in 2017-2020.
  - 10% Tier 1 Capital = 6% Basel III minimum Tier 1 capital + 2.5% Basel III conservation buffer + 1.5% additional G-SIB Tier 1 capital (majority of respondents to AWG BDE are G-SIBs).
  - Considered increases to 70% and 120% RWA (as discussed on page 7).
- The BCBS proposals will result in net increases in regulatory capital of between x3.5 and x6 and will require the banking industry to raise between $8.6bn to $17.1bn in new equity in order to maintain the 2016 banking industry market share in financing new aircraft deliveries in 2017-2020.

Minimum Tier 1 Capital (at 10%) to support USD 177bn in new aircraft financing			
	Tier 1 Capital	Increase, USD	Increase, x
Current average: 19% RW	USD 3.4bn		
70% RW	USD 12.0bn	USD 8.6bn	x 3.5
120% RW	USD 20.5bn	USD 17.1bn	x 6

Adverse Consequences of the BCBS Proposals on the Aircraft Sector

- While the stated intent of the BCBS's proposals is reduction in variation in RWAs across different financial institutions, rather than material net increases in regulatory capital requirements across the banking industry, the impact on the aircraft sector specifically is a drastic x3.5 to x6 increase in capital requirements on secured aircraft loans that, if implemented, would require the banking industry to raise $17bn to $34bn in new equity to support the existing aircraft loan banking books and sustain the current bank market share in new aircraft delivery financing in 2017-2020.
- In addition to the *net* increases in regulatory capital to the aircraft sector, the proposals are insensitive to the risk spectrum *within* the aircraft sector. LGDs on aircraft loans strongly depend on transaction characteristics (age of aircraft and aircraft type, LTV, maturity, amortization profile), in addition to legal jurisdiction.
- AWG BDE respondents indicated that outcomes of the proposed drastic increases in capital requirements for secured aircraft financing will range from some of the institutions considering exiting the secured aircraft financing market entirely due to disproportionate increases in capital requirements relative to other sectors, while some of the institutions considering reducing the size of existing aircraft books via possible asset sales and scaling back new financings.
- By not recognizing the historically low risk of aircraft collateral, the BCBS proposals put secured aircraft loans at a drastic risk-return profile disadvantage relative to higher risk unsecured corporate loans and secured loans with other types of collateral that historically realized higher LGDs. Within the aircraft sector, the BCBS proposals put lower risk aircraft loans at a disadvantage relative to higher risk loans (e.g. low LTV vs. high LTV loans). According to the BDE respondents, consequences will likely include:
  - Reduced capital availability to secured aircraft lending.
  - Reduce size of low risk aircraft loan portfolios on banking books via possible asset sales, undermining the long term partner role played by banks aligned with their airline customers.
  - Overall increase in bank portfolio risk through re-allocating capital away from secured aircraft lending towards riskier unsecured lending and riskier types of collateral.
  - Some aircraft financing may shift towards unregulated shadow banking entities that are possibly less concerned with the long-term health of the aviation industry.
  - Remaining secured aircraft financing in banks may shift to riskier terms and borrowers to capture higher margins to compensate for increased regulatory capital costs that are made essentially risk-insensitive by the current BCBS proposals.

II. Historical LGDs in Aircraft Finance

Capital Markets: EETC LGDs

- Since mid-90s enhanced equipment trust certificates (EETC) have become the common form of aircraft-secured capital markets debt financing for airlines.
- Kroll Bond Rating Agency ("EETC historical recoveries and current outlook", September 2015) conducted a comprehensive study into EETC recoveries in bankruptcy during the 20 year period 1994-2014.
- Typical bank loan LTVs are broadly comparable to B tranche LTVs (A tranche LTVs are generally lower than bank loan LTVs, C tranche LTVs are generally higher). This study uses combined A and B tranche EETC financing as proxy for bank loans.
- $19.3bn in face value of combined A and B tranches issued by US airlines went through bankruptcy proceedings during 1994-2014 period. Aggregate losses on this issuance totaled $162mn during this period, for an LGD of 0.84% --- exceptionally low historical loss rates, considering that this historical period included high-stress periods for the airline industry (airline industry downturn following the 9/11 terrorist attacks, high jet fuel costs of 2006-2008, and the financial crisis of 2008 and the subsequent recession).
- *EETC recoveries in Kroll study are undiscounted recoveries.

Loss and Recovery Rates for EETCs in Bankruptcy 1994-2014				
Tranche	Total loss (mn)	Original Face (mn)	LGD	Recovery*
A	$ 35	$ 16,000	0.20%	99.80%
B	$ 127	$ 3,300	3.90%	96.10%
A+B	$ 162	$ 19,300	0.84%	99.16%

Export Credit Agency LGDs

- Export Credit Agencies (ECAs) support aircraft exports either via pure cover guarantees or direct lending. Typical terms of aircraft-backed loans supported by ECAs are 10 or 12 year maturity with full amortization and with LTV ranging from 70% to 85%, depending on the credit rating of the borrower and the corresponding risk mitigants (see OECD Aircraft Sector Understanding (ASU) documentation at http://www.oecd.org/tad/xcred/aircraftsectorunderstandings.htm).
- **Exim Bank Portfolio Experience:** Between October 1993 and June 2016 Export-Import Bank of the United States guaranteed export credits for **$106,317 million** in aircraft financing to over 200 borrowers in **68 countries**. Total claims on defaulted financing paid during this period amounted to $624 million. Total recoveries amounted to $814 million. Total recovery expenses amounted to $7 million, *resulting in no net loss to Exim* (recoveries exceeded claims plus expenses) and effective historical **LGD of 0%**. Data source: Exim Bank.
- **Export Development Canada (EDC) and Brazilian Development Bank (BNDES) Portfolio Experience**: Between 1996 and 2016 EDC and BNDES supported approximately **$56 billion** (combined) of aircraft exports in the form of direct lending. Defaults during this period totaled approximately **$9.2 billion** (aggregated for the two agencies). Total losses amounted to approximately **$249** million with historical **LGD of 2.7%**. EDC financed in approximately **44 countries**. BNDES financed in approximately **27 countries**. Data sources: EDC and BNDES.
- Note: ECA recovery data are undiscounted recoveries.
- While until recently EETCs were primarily issued by US airlines, Exim, EDC and BNDES portfolios are highly diversified across jurisdictions. The mid-90s to 2016 historical period for the ECA portfolios coincided with the historical period for the EETC market and included high-stress periods for the airline industry (airline industry downturn following the 9/11 terrorist attacks, high jet fuel costs of 2006-2008, and the financial crisis of 2008 and the subsequent recession).

Historical Bank Loan LGDs: Global Credit Data Study

- For the purpose of this study Natixis has provided to Prof. Linetsky an extract of the Global Credit Data (GCD) data on aircraft loans (which is a sub-sample of the GCD database available to Natixis as GCD member and may not be the same as the whole GCD database). It contains data on all aircraft loans that experienced a default event during the period from 2000 to 2013 and which were resolved by the time of the data extraction and were reported to the GCD by the GCD member banks. In our study we excluded unsecured loans and subordinated loans. After these filters, 960 senior secured loans that experienced a default event during 2000-2013 were included in our analysis. We computed the (unweighted) average of LGDs in this loan data set (using uncapped and Euribor-discounted recovery data in the GCD data set).
- **The average senior aircraft-secured bank loan LGD is 7.8%. The median LGD is 1.3%.**
- We note that this LGD is higher than ECA and EETC LGDs likely due to the fact that virtually all ECA transactions and majority of EETC transactions are collateralized by new aircraft deliveries, while the GCD data include older aircraft collateral, as well as possible differences in terms and conditions. We also note that the current ECA practice is to include cross-default and cross-collateral provisions (as per the ASU). Historical losses in ECA portfolios may also be lower due to this factor.

Historical Bank Loan LGDs: Global Credit Data Study Continued

- We note the difference with the LGD of 11% reported in IIF and AFME submissions to the BCBS based on the GCD data. The differences are due to the following methodological differences: 1) we removed junior loans from the data set, as our study focused on senior aircraft-secured loans only, while the GCD study included both senior and junior secured loans. 2) We did not apply caps to recoveries or LGD. 3) Our average was computed as simple average at the loan level (average LGD for all loans in the data set). The GCD calculation followed a different methodology. It first aggregated recoveries on all loans to the same entity and then divided by the aggregate exposure on all loans to the same entity. The results were then averaged across entities to arrive at the average entity-level LGD across entities. The average LGD in our study is across loans, rather than entities. We thank the GCD for explaining their calculation methodology.
- The IIF and AFME submissions added an additional 5% to the base historical LGD figure of 11% to account for discounting of recovery from resolution back to default event date at the loan rate that includes margin vs. the raw GCD data that include discounting at Euribor. Since no data on loan margins were available in the data extraction we examined and we could not confirm whether all recoveries reported in the data set included accrued loan interest to the default resolution date in cases where such accrued interests were received, we could not confirm the 5% discounting figure. Hypothetically, if we add the 5% figure to our base 7.8% LGD, we arrive at the discounted LGD of 12.8% vs. 16% reported in IIF and AFME submissions.

Comparison of AWG BDE Figures with Historical Figures

- To compare these historical LGD figures with the average reported A-IRB LGD of 8.8% in the AWG BDE, we note that these figures are of a different nature.
- The average 8.8% A-IRB LGD in the current bank portfolios represents banks' modeled stressed LGDs for the current portfolio, also taking into account the bank's historical data. Current portfolios may have a significantly different risk profile that the historical data in the GCD database, such as aircraft age and type, loan LTV, maturity and amortization profile, and borrower PDs. Since the financial crisis of 2007-2008, banks have worked to reduce portfolio risk. It is likely that the current bank portfolio risk profiles are lower than the risk profile in the historical data during the 2000-2013 period.
- Additionally, the groups of banks in the AWG BDE and in the GCD are not the same (while some of the banks participated in both data collection exercises, some participated in only BDE or only GCD).
- We also note that secured aircraft loan LGDs are generally low due to the residual life of the aircraft which enables lenders to restructure the loan with the same operator or re-position the aircraft with another operator, thus avoiding sale of the aircraft in unfavorable market environments.

Comparison of AWG BDE Figures with Historical Figures

- We further note that the AFME submission translated the LGD of 16% into RW of 55% using historical observed default frequency in the GCD database as the PD input into the A-IRB RW formula.
- We note that the corresponding translation of LGD into RW using the data collected in the BDE on current bank portfolios results in a materially lower RW of 36% corresponding to 16% LGD (and RW of 29% corresponding to 12.8% LGD). The difference is likely accounted for by the higher PD in the historical data vs. current bank portfolios due to higher risk profiles in the historical data, as discussed above.
- Table below summarizes translation of LGD into RW using the current average bank portfolio data collected in the BDE.

LGD	RW
7.8%	17.5%
8.8%	19.7%
12.8%	28.7%
16.0%	35.8%

21 June 2016

Basel Committee on Banking Supervision
Attention: Banking Committee Secretariat
Bank for International Settlements
CH-40002 Basel Switzerland

Re: Comment letter on the consultative document: reducing variation in credit risk weighted assets – constraints on the use of internal model approaches, issued March 2016

Basel Committee Secretariat,

This comment letter on the above-referenced consultative document (the '**Consultative Document**') is submitted by the Aviation Working Group (see www.awg.aero, '**AWG**'). AWG is a non-profit group comprised of major banking and other financial institutions and manufacturers from around the world, and works on regulations and practices to facilitate international aviation financing and leasing. Its members are from Brazil, Canada, China, France, Germany, Japan, Singapore, the United Arab Emirates, the United Kingdom, and the United States. AWG has status at, and other working arrangements with, several international and intergovernmental organisations, including the OECD (where it works on international export credit financing rules), UNIDROIT (where it was central to the development of an international treaty on security over aircraft collateral and now works on that treaty's global implementation), and ICAO (the UN body for international civil aviation, where it works on a range of projects).

AWG comments on the proposals in the Consultative Document, with references to paragraphs and defined terms taken from the Consultative Document. In particular, these comments focus on paragraph 2.1 (summary of proposals) of the Consultative Document which proposes the removal of IRB approaches for *inter alia* specialised lending and large and medium sized corporates (the '**Proposals**').

executive summary

1. The Proposals would fundamentally and adversely change the regulatory framework applicable to capital requirements for credit risk, lack justification, and require major modification.

2. The foregoing conclusion is driven by the following points, which, taken together and elaborated on below, summarise our comments:

2.1 Further deliberation on, and data relating to, the Proposals are required, given their unjustified and substantial adverse effects.

2.2 The Proposals should enhance, not restrict, risk sensitivity, meaning that (i) the IRB approach should be retained, with no floors, and (ii) the standardised approach ('**SA**') should be made more risk sensitive.

2.3 The Proposals would produce misalignment between (i) internal risk assessment and capital requirements, and, more generally (ii) internal risk and the regulatory-produced cost of capital. The Proposals are not justified on grounds of risk.

2.4 Nor are they justified on economic and policy grounds, as they would have a range of substantial adverse effects, including on (i) the economy as a whole, in general, and the aviation sector, in particular, and (ii) the intended regulatory objectives of the Basel Committee.

need for modified process

3. The sophisticated IRB approach for specialised lending and lending to large and medium sized corporates has been developed, tested, and refined over many years. Any fundamental change to that approach requires deliberation and data commensurate with its wide-ranging implications. That is magnified given the blunter nature of the proposed alternatives, being the SA or a constrained IRB approach with unjustified high LGD floors and/or the slotting approach for specialised lending. Further deliberation and data are required.

4. Such additional deliberation and data should take into account the need to align with the parallel and related initiatives on the assessment and effects of internal models, including those of the European Banking Authority (regulatory technical standards) and the European Central Bank (proposed a target review of internal models), each of which seeking conformity with the Proposals. The timing of the final Proposals should be aligned with these initiatives.

need for greater risk sensitivity

5. The Proposals would remove well-developed metrics that more accurately determine risk in specialised lending and lending to large and medium sized corporates than what they contemplate. There is a need for *greater risk sensitivity, not less*. This should be achieved through (i) greater harmonisation and transparency with respect to different bank's IRB methodologies, rather than disapplying IRB approaches, and (ii) modifying the SA to reflect more risk sensitivity, which, correspondingly and beneficially, would enhance alignment with the IRB approach. On the former, performance model-oriented parameters should be developed over the coming period. On the latter, such could be achieved through (a) somewhat more granularity in use of external rating (e.g., the differentiation between higher and lower investment grades), (b) lower risk weightings for shorter term transactions than longer term transactions, and (c) lower risk weighting for senior and/or secured exposures.

need to retain the IRB approach - for specialised lending and large- and medium-sized corporates (focus on aviation object finance)

6. The Consultative Document notes that banks are 'unlikely to have sufficient data to produce reliable estimates of PD and LGD' with respect to specialised lending and large corporates, and, in consequence, that the SA, the Slotting Approach or floors must be employed in such transactions. That is not the case. Such data-based estimates exist and indicate that: (i) re PDs, financings, including of corporates, secured by aircraft collateral have low default levels (indicating low risk levels - yet it is proposed that banks be penalised for this low risk), and (ii) re LGDs, such financings have high recovery rates, and, in particular, that actual LGDs are a fraction of (a) the implied risk weighting of 120% that would apply using the SA, and (b) the proposed IRB floors that would apply in the limited continued use of internal models for asset-backed financings. More generally,

large banks have sophisticated and well-developed IRB models which, while centred on PDs and LGDs, include additional (risk-refining) metrics – for example, externally assessed asset values performed throughout the transaction by third party specialist used in determining these items. Their IRB models are regularly tested both internally and externally (including by regulators), resulting in sensitive and refined risk modelling. Moreover, penalising transactions for which default rates are low raises basic policy concerns.

7. The principal reason for low risk and loss levels in aircraft-backed financings is transactional structuring based on reliable collateral and strong legal rights relating thereto. Aircraft financing is structured to ensure control over cash flows from the underlying assets, a comprehensive security package, and prudent LTVs based on stable asset values. The adoption of the Cape Town Convention by jurisdictions around the world provides a more uniform and predicable legal mechanic to enforce against secured assets. Once security is enforced, banks have access to a large and liquid global secondary market for aircraft assets, thus maximising the realisation of value. The removal of the IRB approaches does not give credit to the low risk and loss levels in aircraft-backed transactions.

8. The resulting application of the SA produces substantially higher capital requirements, and a mismatch between risk and regulatory-required capital. There are also technical problems and inconsistencies in the SA, which should be addressed to effect greater risk sensitivity within the SA and alignment between the SA and IRB approaches. These include the treatment of lending to parts of large corporate groups supported by the credit of the overall group.

<u>adverse consequences of the proposals</u>

9. The Proposals will have a number of material adverse consequences, including (i) a substantial increase in regulatory capital, despite assertions of capital neutrality, (ii) the misalignment between risk and the regulatory-produced cost of capital, (iii) the reduction of incentives to reduce risk (and potential incentives to lend on an unsecured basis), contrary to the core policies of the Basel Committee, (iv) discrepancies in RWA measurement, resulting in additional RWA variations, contrary to the core policies of the Basel Committee, (v) harm to the economy as a whole, and (vi) harm to aviation lending and the air transport sector, on account of specialised lending becoming economically less attractive.

10. As regards such harm to aviation lending[1] and the air transport sector, reference is made to our letter to the Basel Committee dated 10 March 2016, which *inter alia* notes the anticipated increase (in customary aircraft-backed financings to special purpose entities) in capital by 200% - 300% compared with current experience-based IRB practices. This would unjustifiably and fundamentally disrupt the specialised lending market, which is crucial for a stable and sustainable economy, investment in safe and environmentally-

[1] Approximately USD 120 Billion of financing was required to support Airbus and Boeing deliveries in 2015. Financing levels for such Airbus and Boeing deliveries are expected to increase to USD 170 Billion per year by the end of the decade. These levels increase further when the deliveries of other manufacturers are included. A substantial part of such financing requirements are met through bank lending.

friendly advanced aircraft, the growth of needed air transport capacity, and increased transportation-related trade, with its large multiplying effects.

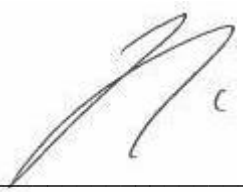
recommendation action

11. AWG recommends (i) further deliberation on, and testing the validity of data relating to, the Proposals, (ii) modification of the Proposals to retain the IRB approaches with no floors for specialised lending and lending to large and –medium sized corporates, (iii) harmonising aspects of technical modelling (parameters, not output) to enhance comparability of models, and (iv) revisions to the SA to increase its risk sensitivity. These items require increased engagement between regulators and financial institutions to ensure better transparency and harmonisation of the metrics used to determine RWAs within different institutions' IRB approaches (and for the SA approach). This would help meet the stated policy objectives of Basel Committee (in particular, limiting variability and enhancing comparability) without removing the well-developed methodologies that allow risk to be accurately assessed in aviation lending.

Next steps

AWG requests a meeting with the Basel Committee to elaborate on, and provide substantiating data in respect of, these comments, and to plan further work to assist the Committee.

Sincerely yours,



Claude Brandes
Airbus
Co-Chairman, Aviation Working Group

Daniel Da Silva
Boeing
Co-Chairman, Aviation Working Group

CC: Jeffrey Wool, secretary general, Aviation Working Group

10 March 2016

Basel Committee on Banking Supervision
Attention: Basel Committee Secretariat
Bank for International Settlements
CH-40002 Basel, Switzerland

Re: Comment letter on the second consultative document – standards / revisions to the standardised approach for credit risk, issued December 2015

Basel Committee Secretariat,

This comment letter on the above-referenced consultative document (the '**2nd consultative document**') is submitted by the Aviation Working Group (see www.awg.aero, '**AWG**'). AWG is a non-profit group comprised of major banking and other financial institutions and manufacturers from around the world, and works on regulations and practices to facilitate international aviation financing and leasing. Its members are from Brazil, Canada, China, France, Germany, Japan, Singapore, the United Arab Emirates, the United Kingdom, and the United States. AWG has status at, and other working arrangements with, several international and intergovernmental organisations, including the OECD (where it works on international export credit financing rules), UNIDROIT (where it was central to the development of an international treaty on security over aircraft collateral and now works on that treaty's global implementation), and ICAO (the UN body for international civil aviation, where it works on a range of projects).

AWG has followed the work of the Committee since AWG's first submission in 2001. It made another submission in 2004. AWG has not re-engaged with the Committee since then as its banking members have invariably made use of the IRB approach, with outcomes that have, in parallel (i) been risk sensitive, and (ii) promoted safe and sound lending practices, supporting the substantial lending needs of the international aviation community, a sector of central importance to international trade and economic development.

That framework would be fundamentally and adversely changed by proposals set out in the 2nd consultative document (the '**proposals**'), through mandatory capital floors based on the revised standardised approach. Accordingly, AWG comments on the proposals, with references to paragraphs and defined terms taken from the 2nd consultative document, as follows: -

<u>the problem in summary</u>

1. Where aircraft collateral secures non-performance of a loan (on terms set out, *mutatis mutandis*, in para 50, herein '**aircraft-backed loans**') to a special purpose entity, the flat risk weight of 120% is vastly out of proportion with transactional risk and LGD data and estimates determined by the most conservative methods. It would result in a higher capital ratio than for loans to most unsecured corporate borrowers, which, beyond being counter-intuitive, does not accord with empirical data. It would, if adopted (i) result in an increase in capital by 200%-300% compared with current data and experience-based practices, (ii) mis-align capital requirements and risk sensitivity, as the use of special purpose entities insulates the value of aircraft collateral thus reduces transactional risk, (iii) remove the risk weighting-related incentive to reduce transaction risk through transactional structuring, (iv) remove incentives for countries to improve and comply with rules of law designed to reduce secured transactional risk, and (v) have a significant adverse impact on global aviation finance, and, thus, on the transportation sector, with a range of adverse micro- and macro-economic consequences. The reduction to a flat risk weighting for issue-specific rated object financing (a) would not fundamentally redress these problems, as it would not take into account the reduced risk (on account of the aircraft collateral) compared to an unsecured loan to a corporate with the same rating, and, more generally, (b) would apply in few cases given the small number of rated aircraft-backed loan borrowers.

2. A range of factors, including the profile and incentives of, and lending practices to, aircraft-back loan borrowers, has resulted in a scarcity of defaults in aircraft-backed loans over time and across jurisdictions. Probability of default figures do not accord with actual defaults, which are substantially lower. Most pertinently, actual LGD has been low

over time and across jurisdictions. The reasons for low LGD are as follows: (i) aircraft collateral has consistently retained its value, (ii) aircraft collateral, when sold and re-deployed, benefits from a large, global, and liquid secondary market, (iii) transactions are structured to minimise risk, including by use of prudent LTVs, bankruptcy remote structures, and cross-collateral and default clauses, and (iv) the laws around the world permit prompt and predictable realisation of aircraft security. On the last point, and most recently, the success of a global international treaty (the Convention on International Interests in Mobile Equipment as applied to Aircraft Equipment) has further improved such realisation of security, including in the case of bankruptcy, and has done so with express and short realisation timetables powerfully backed by binding, treaty-based international legal obligations.

3. The features in point 2 above led the OECD, in reviewing LGD for aircraft-backed loans, to reach conclusions which are fundamentally inconsistent with those apparently underlining the Committee's calculations related to the risk in aircraft-backed loans. See, in particular, the risk and market reflective pricing under the Arrangements for Officially Supported Export Credits (Annex III, Aircraft Sector Understanding). Such pricing, developed through an elaborate and ongoing data-driven intergovernmental process, acknowledges low LGDs for aircraft-backed loans to all categories of corporates. The Basel Committee and the OECD should align LGD assumptions, which requires conformity by the former with the latter, given the data-based nature of the OECD's conclusions.

4. In sum, aircraft-backed loans, over time and across jurisdictions, are a highly secure category of asset-backed secured loans, with some of the lowest LGDs. In particular, aircraft-backed loans, while having some commonality with transactions backed by commercial real estate, compare favourably with such transactions. It follows, *a fortiori* and from objective criteria, that if real estate-backed transactions are subject to special rules for required capital, then aircraft-backed loans must be as well.

<u>the solution in summary</u>

5. The Committee should develop a more risk-sensitive approach which produces materially lower risk weighting for aircraft-backed loans than apply (all else equal) to (i) unsecured loans to corporates, and (ii) object financings, in each case as currently set out in the proposals. That would, in turn, provide risk management incentives.

6. There are two means by which the Committee can effect the foregoing: -

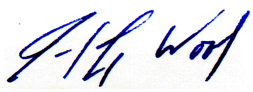
First, by a table of sliding risk weighting, primary driven by LTVs, conceptually similar to, but not the same as, that applicable commercial real estate. That table should have sufficient granularity to accurately reflect changes in transaction risk and LGDs corresponding to changes in LTVs (and avoid 'cliff effects' in moves between LTV groupings).

Secondly, by permitting aircraft collateral to be used in credit risk mitigation calculations.

<u>next steps and further data and information</u>

7. AWG stands ready, and would welcome the opportunity, to provide substantiating and (LTV-related) valuation data to, and otherwise to consult and engage with, the Committee as thought helpful and requested upon review of this comment letter.

Sincerely yours,



Jeffrey Wool
secretary general
Aviation Working Group

CC: Messrs. Claude Brandes, Airbus, and Daniel da Silva, Boeing, AWG Co-Chairmen