MOODY'S ANALYTICS

TOPICS @CREDIT EDGE

Moody's Credit Risk Analytics Group

Authors:

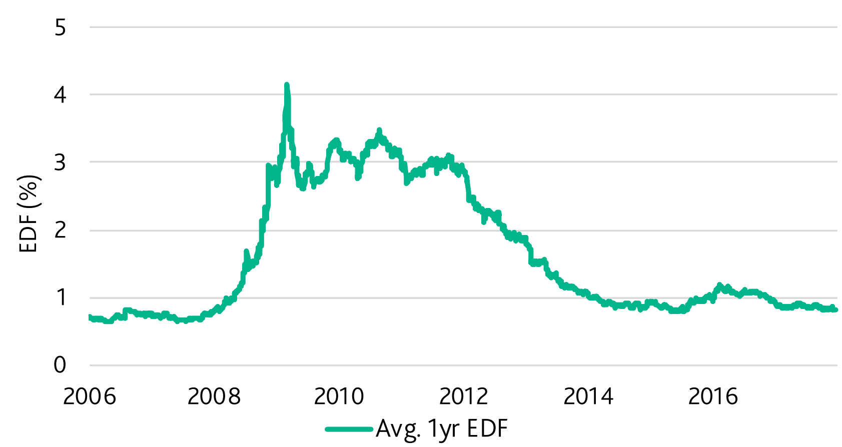
David W. Munves, CFA
Managing Director
1.212.553.2844
david.munves@moodys.com

Yukyung Choi
Associate Director
1.212.553.0906
yukyung.choi@moodys.com

Bank Default Risk Improves in 2017

Almost all commercial entities have exposures to banks, making the global banking system key to the health of the world's economy. In this paper we use Moody's Analytics' public firm Expected Default Frequency (EDF™) probability of default metrics to assess the evolution of the banking system's credit quality in 2017. The news is good: the system's average EDF improved last year, declining from 0.92% to 0.82% (Figure 1) [1]. This is the lowest level since mid-2015, when it was also around 0.80%. Indeed, it is only 0.10% above the levels that prevailed before the financial crisis, even though the current average projected default rate reflects the beneficial impact of survivorship bias.

Figure 1: Average 1-year EDF for banks



On an aggregate basis, 2017's lower average predicted default rate is due to the generally improved global economic outlook from increased stock prices and reduced credit risk. The average EDFs for large western European American banks, and for all size groupings in Eastern European, Middle Eastern, and African, fell the most (i.e., experienced the greatest declines in default risk), while metrics for other North American institutions rose modestly. We provide details of these changes on p.5.

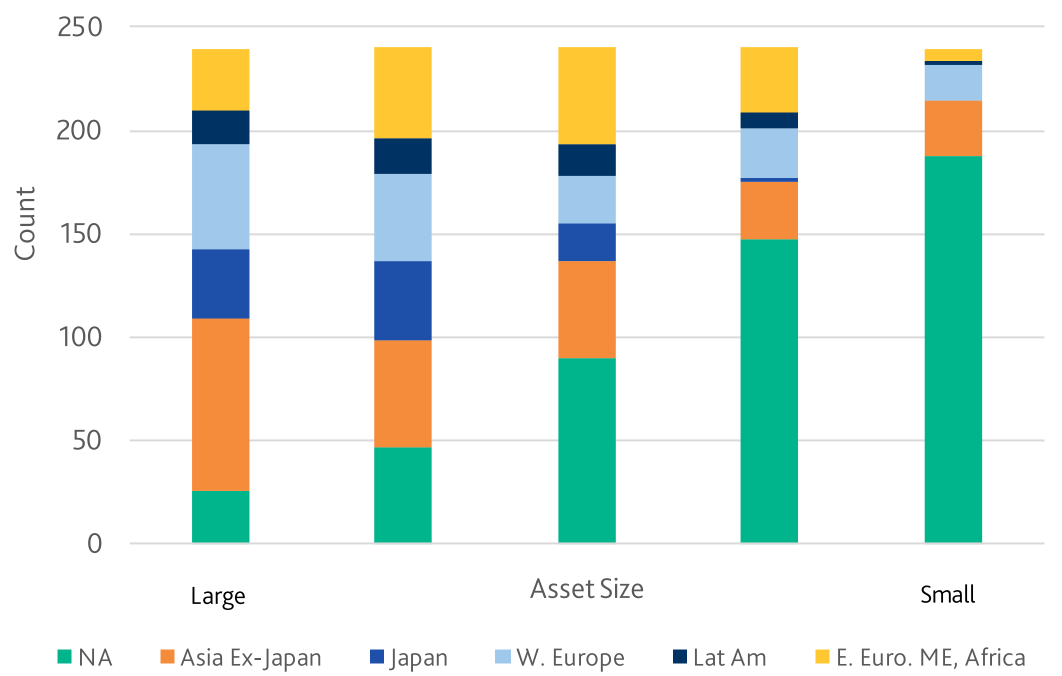
[1] "EDF" is Moody's Analytics' brand name for "probability of default". The metrics are derived from information about companies' capital structures and their share prices and price volatility, and are contained in the CreditEdge platform. We publish EDFs at the entity and bond levels. Because they incorporate market information they are forward-looking: if, for example, there are 100 entities, each with a 1% EDF, we can expect one of them to default over the next 12 months. EDFs are produced on a daily basis. The measures are calibrated to reflect realized default rates. For further details about EDFs, please see the Modeling Methodology paper *Credit Risk Modeling of Public Firms: EDF 9* (Nazeran and Dwyer, June 2015). EDFs and related data, including their drivers, are available via the CreditEdge website, an Excel add-in, an ATP interface, and a daily data file. Moody's Analytics also produces EDFs for privately held firms. The modeling approach for private firms differs substantially from that used for publicly held entities. Private firm EDFs are available via the RiskCalc platform. In this paper all references to "EDF measures" are to public firm metrics at the one-year horizon.

CreditEdge provides broad coverage of banks

CreditEdge, the suite of data and analytics built around the public firm EDF model, contains metrics on 1,260 banks in 70 countries. They range in size from $0.7 million in total assets to $3.9 trillion. By comparison, Moody's Investors Service rates approximately 300 banks globally, with a bias towards larger entities.

We have divided the sample into six regions, namely North America, Asia Ex-Japan, Japan, western Europe, eastern Europe, the Middle East, and Africa, and Latin America. We further divided our universe into five equally sized (by entity count) buckets based on total assets. Due to the large size of the US's economy and the highly fragmented state of its banking system, North America dominates the two smallest size buckets (Figure 2).

Figure 2: Composition of bank size buckets (based on total assets) by region



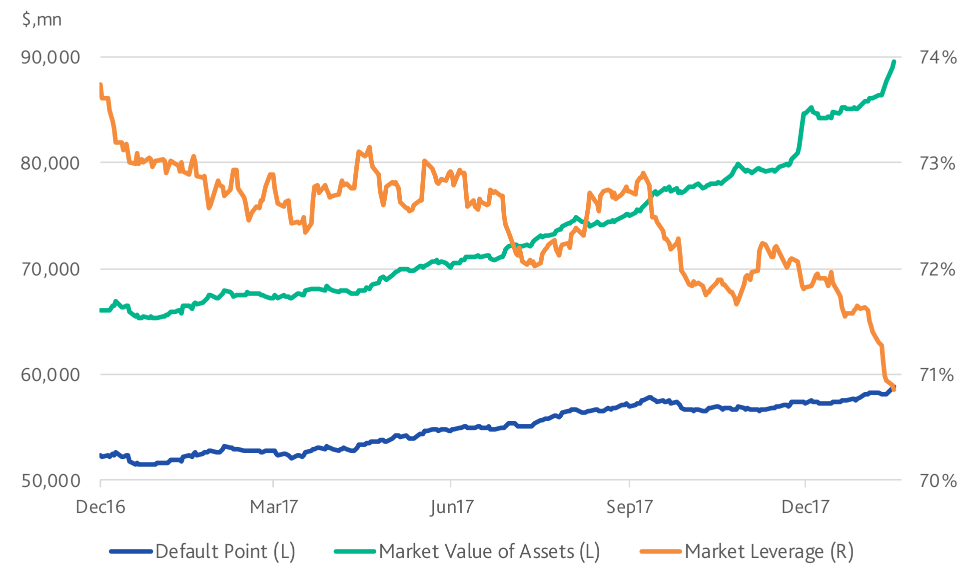
Most of the improvement in average EDF reflects lower market leverage

As CreditEdge users are aware, an entity's EDF reflects three drivers, namely its market value of assets (MVA), as calculated by the model; its default point (the value of liabilities used by the model; we utilize the term "default point", or "default barrier", because the firm is assumed to default if its MVA falls below it); and its asset volatility, also as calculated by the model. The first two metrics are combined as default point/MVA, which CreditEdge calls market leverage. Market leverage is a good proxy for financial risk, while asset volatility represents business risk.

In 2017 aggregate average market leverage improved modestly, from 74% to 71%. The main reason for the move was a rise in the market value of assets, as bank share prices increased.[2] The default point was up as well, but by a smaller amount (Figure 3).

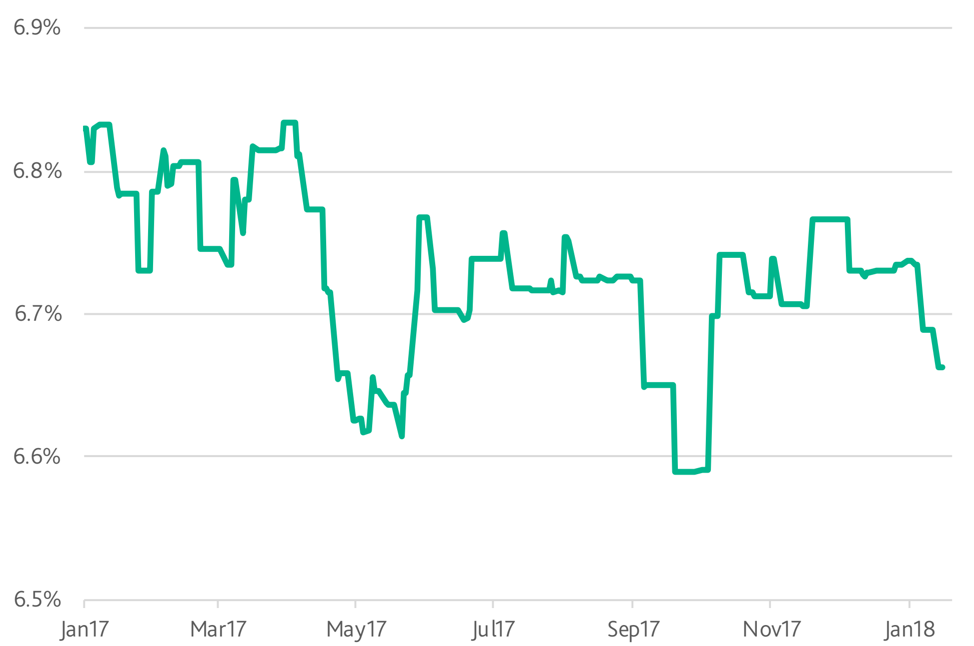
[2] All else being equal, higher share prices lead to high MVA estimates. This in turn results in reductions of firms' EDF metrics.

Figure 3: Average default point, market value of assets, and market leverage, all banks in 2017



Banking sector business risk, as captured by average asset volatility for our sample of all banks, fluctuated within a narrow band in 2017 (Figure 4). One note is that the EDF model's measure of asset volatility is generally low for banks, given the highly diversified nature of their books of business. That is, even the risk in one asset class, such as commercial and industrial loans, is spread across a broad range of borrowers, sectors, and often regions.

Figure 4: Average asset volatility, all banks in 2017

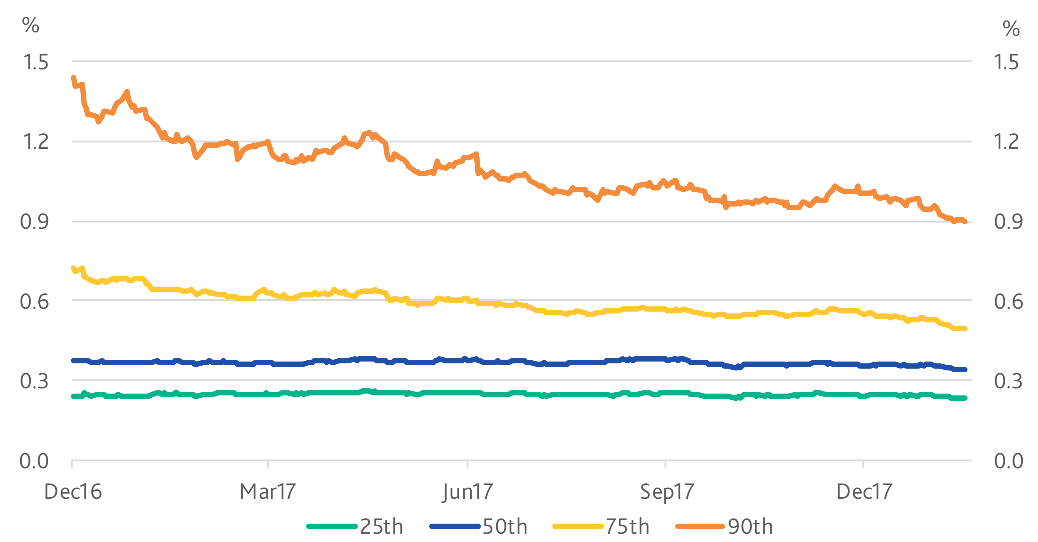


Improvement in the average bank EDF mostly reflects lower tail risk

The 0.10% reduction in average EDF in 2017 was mostly driven by entities at the higher end of the EDF scale, i.e., in the tail of the distribution. This is clear in Figure 5, which shows the EDF levels at the 25th, 50th, 75th, and 90th percentiles of the distribution of measures for all banks. For example, last year the

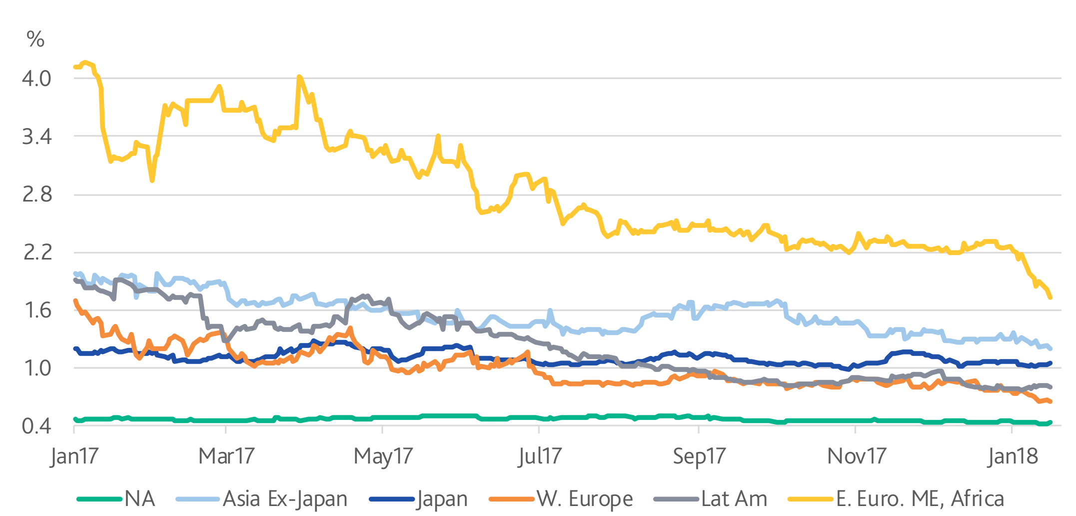
90th percentile EDF fell from 1.44% to 0.90%, while the median EDF, a metric that is widely followed by CreditEdge clients, barely budged. This is a common pattern for large populations of sector and regional EDFs across time. It's not surprising — we would expect the credit quality of weaker entities to fluctuate more widely.

Figure 5: EDF levels for 25th, 50th, 75th, and 90th percentiles of the distribution



When measured by region, the largest improvement in the 90th percentile EDF was recorded by the Eastern Europe, Middle East, and African grouping, followed by Latin America (Figure 6). Credit quality in Western Europe strengthened the most amongst the developed markets, with the 90th percentile EDF falling from 1.70% to 0.65%, most likely reflecting the improving regional economy. The related continued recovery of some of the "peripheral" economies, such as Greece and Portugal, also played a role. By contrast, the 90th percentile metric for North American institutions was unchanged in 2017 at around 0.45%.

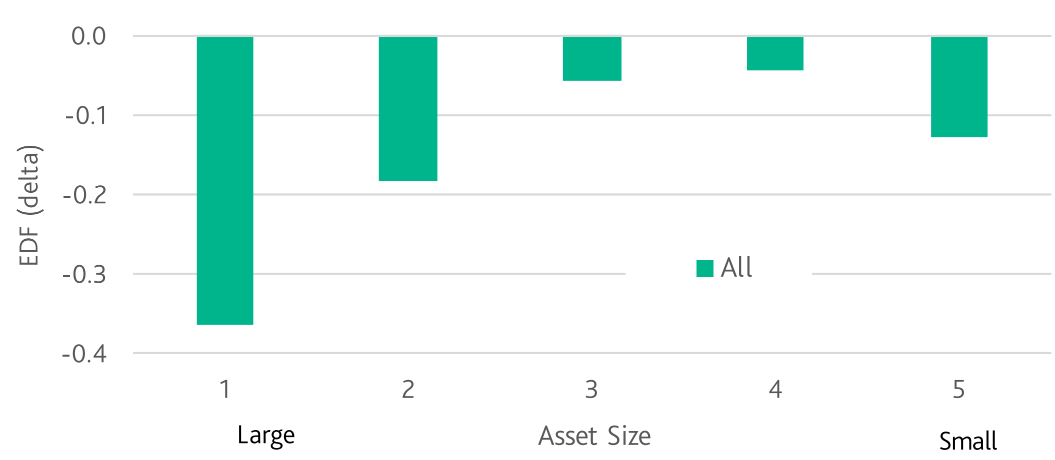
Figure 6: 90th percentile EDF levels by region



Average EDFs improved for banks in all size buckets in 2017

Figure 7 breaks down the 0.10% improvement in 2017's average EDF by size of bank, ranked by total assets, from largest to smallest. The five buckets contain an equal number of entities.

Figure 7: 2017 average EDF changes by entity size (measured by total assets)



The biggest gain was in our sample of large banks, mainly because of significantly reduced risk for western European institutions (Figure 8 – note that some cells are empty because there are too few entities to populate them properly). By country within Europe, the average EDF fell the most in Spain, Austria, France, and the UK. The one area of significant weakness was mid-sized North American banks, where the average EDF rose by 0.33% on the year. This was due to one entity, First NBC Bank Holding Company, which went bankrupt in May 2017 with a 1-year EDF of over 30%. (Due to model calibration challenges involving very risky firms, EDFs are capped at 35% for financial entities, and 50% for non-financial entities.) Without this one institution, the bucket's average EDF rose by only 0.02%.

Figure 8: EDF Changes in 2017 by size and region

	Size bucket (by total assets, largest to smallest)				
EDF (%)	1	2	3	4	5
NA	-0.02	0.02	0.33	0.02	-0.08
Asia Ex-Japan	-0.43	-0.32	-0.12	0.01	-0.19
Japan	-0.06	-0.02	-0.01	-	-
W. Europe	-0.82	0.01	-0.09	-0.11	-0.08
Lat Am	-0.25	-0.24	-0.16	-	-
E. Euro. ME, Africa	-0.12	-0.55	-0.66	-0.23	-

Conclusion

The health of the global banking system, as measured by 2017 changes in average EDFs for different regions and size of institutions, is reasonably good – the metrics in most buckets were either broadly unchanged or lower. The strength shown amongst the weaker entities is also encouraging, and overall default risk is low compared to past levels. In sum, the 2017 EDF developments analyzed in this report depict a banking system that appears to be in good shape to support continued global economic growth.

To order reprints of this report (100 copies minimum), please call 212.553.1658.

Report Number: 1109118

Contact Us

Americas :	1.212.553.4399
Europe:	+44 (0) 20.7772.5588
Asia:	813.5408.4131