Fall from grace

European fallen angels 2000 - 2018

European Credit Strategy and Derivatives Research

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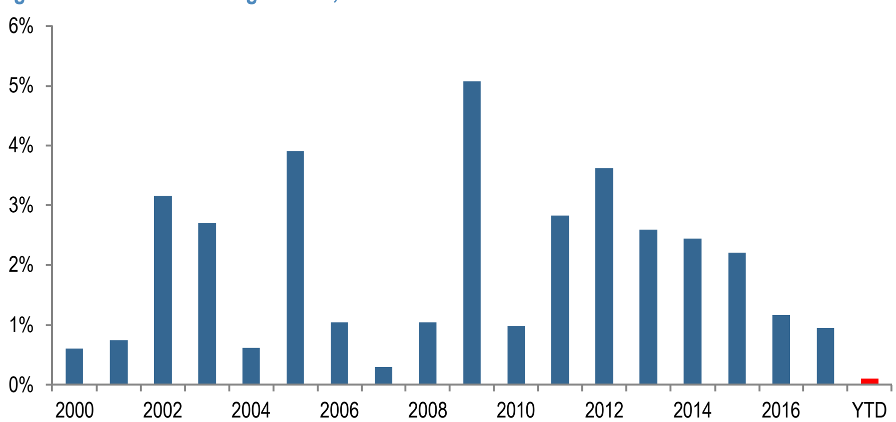
- **European investment grade fallen angel rates have averaged 1.9% of notional annually since 2000. This translates to a portfolio credit loss of 38bp per year.**
- **In the next recession, we estimate that fallen angel rates could be approximately 6% over one year, with a portfolio credit loss of between 100 - 200bp.**

For a dedicated investment grade manager, the majority of credit risk in their portfolio does not stem from actual defaults, but from rating deterioration. In our view, the best way to look at this is through downgrades to high yield. In this note, we analyse the volume of 'fallen angels' since 2000, defined as bonds migrating from the iBoxx EUR Corporates to the iBoxx EUR High Yield benchmark. These indices use the mean rating of S&P/Moody's/Fitch to determine inclusion.

Since the inception of the asset class, there have been 424 fallen angel bonds from 156 issuers, with a total notional of €339bn. The 'fallen angel rate' has averaged 1.9% of notional per year, although it has historically been extremely cyclical (Figure 1).

Unsurprisingly, it peaked in 2009 at 5.1% in the immediate aftermath of the financial crisis. The lowest full year figure was 2007 at 0.4%, although it is possible that we may break this record this year. To date, we have seen just three fallen angel bonds from two issuers: TDC and BRF. For the most part, however, it has remained elevated throughout the current credit cycle as we have bounced from the Eurozone crisis in 2011-2012 to the commodity crash of 2014-2016.

Figure 1: Annual Fallen Angel Rates, % of notional



Source: J.P. Morgan, Markit Group.

See page 10 for analyst certification and important disclosures.

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Portfolio credit losses are 38bp on average

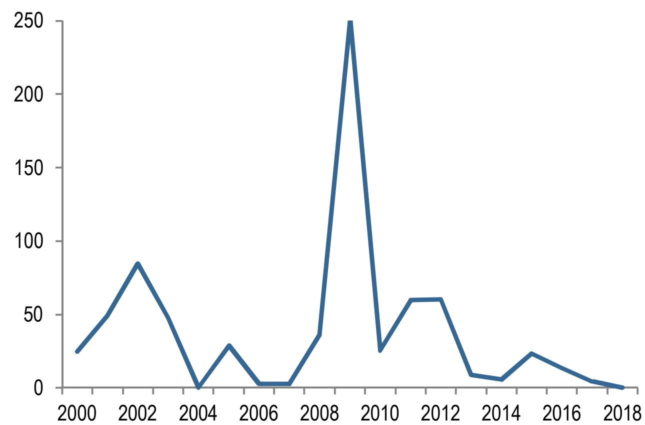
The actual fallen angel rate only tells half the story. The other half is the impact on portfolio returns from selling downgraded bonds that exit the benchmark. To estimate this, we make the assumption that investors buy bonds at the issue price and sell at the bid price on the last day the bond was in the investment grade index. This is analogous to using 100 minus the recovery rate when estimating losses from defaults in high yield, although we recognise that many funds are not actually forced sellers of fallen angels. We also control for moves in risk-free rates in the interim period, to capture only the price impact of spread changes.

On average, we find that investors have lost 38bp per year from fallen angels since 2000 (Figure 2). This can be considered a simple initial estimate of the benchmark spread needed to compensate investors for holding a portfolio of investment grade credit rather than sovereign bonds.

Notably, however, the losses have been much more concentrated than fallen angel rates, with almost all of this loss coming during periods of recession or economic slowdown. The maximum loss was 252bp during 2009, while several years have seen zero losses.

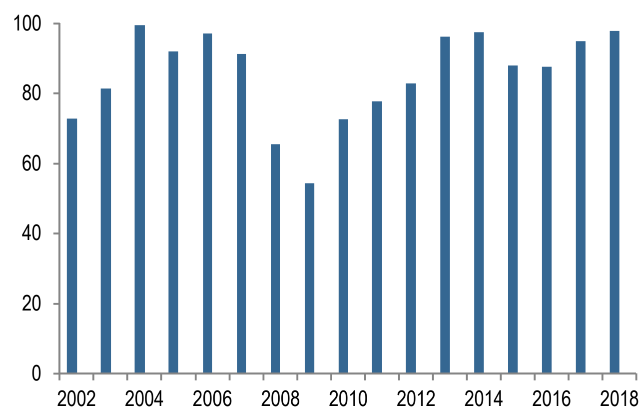
The reason for this is that the average downgrade price is also cyclical, meaning that portfolio credit losses have a 'squared' relationship with the cycle. For example, while downgrade rates were fairly high in 2014, the average price on downgrade was 97.5pts (Figure 3). As a result, they barely had any impact on portfolio performance. By contrast, in 2009 the average downgrade price was just 54.4pts, and fallen angels therefore significantly dragged on portfolio returns. This makes sense, as overall spreads tend to be wider during recessions. As a result, prices for all bonds are lower, and so any forced seller is likely to realise larger losses.

Figure 2: Credit Losses from Fallen Angels, bp



Source: J.P. Morgan, Markit Group. % of market value.

Figure 3: Fallen Angel Average Downgrade Price, pts



Source: J.P. Morgan, Markit Group. Adjusted for risk-free rate moves.

Where have the losses been?

The most consistent driver of the overall fallen angel rate is senior non-financials, which should not come as a surprise as this sector has historically made up between 50 – 60% of the total notional of the investment grade benchmark (Figure 4). There has also more idiosyncratic risk in the non-financials space over the past two decades, from corporate actions, business model disruption, or sectoral crises.

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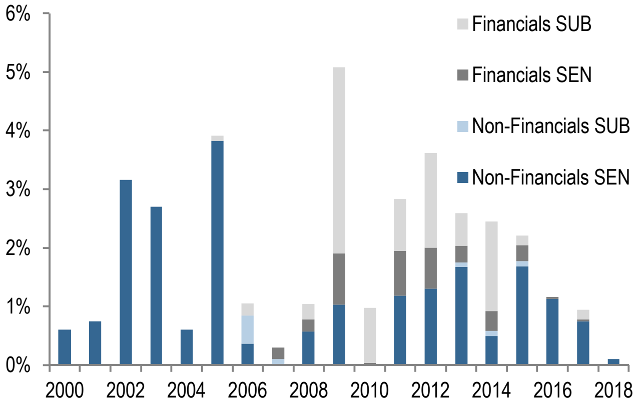
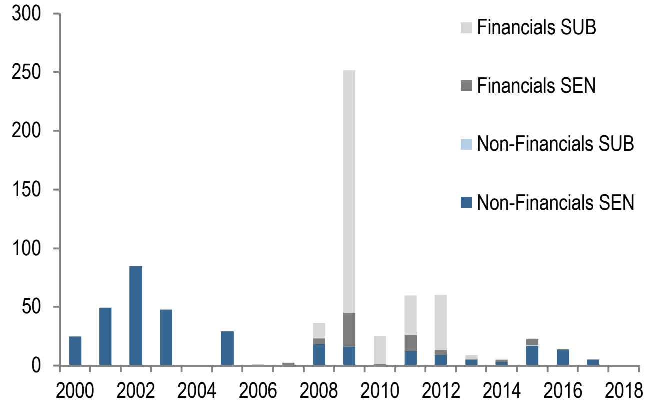
However, most of the actual losses in the last decade have come from subordinated financials (Figure 5). During the financial crisis, a large volume of legacy bank T1/2 migrated into high yield at very distressed prices. Out of a total notional of €218bn at the start of 2009, €31bn was downgraded at an average price of just 41.2pts. The Eurozone crisis from 2010 – 2012 then saw a further €42bn of subordinated financial fallen angels, as many periphery banks were notched to the sovereign rating, although prices had recovered to 73.3pts on average.

Figure 4: Fallen Angels Rate Contribution by Asset Class, %



Source: J.P. Morgan, Markit Group.

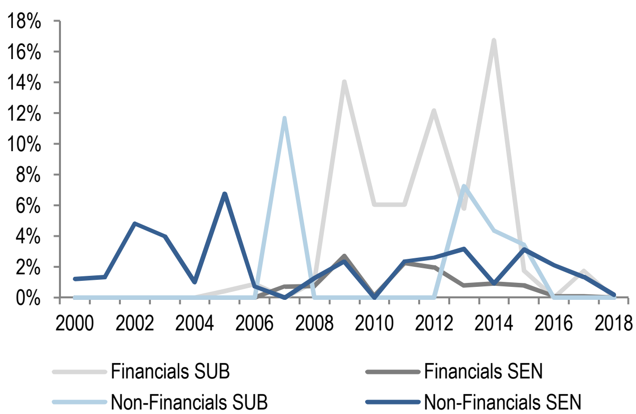
Figure 5: Credit Losses Contribution by Asset Class, bp



Source: J.P. Morgan, Markit Group.

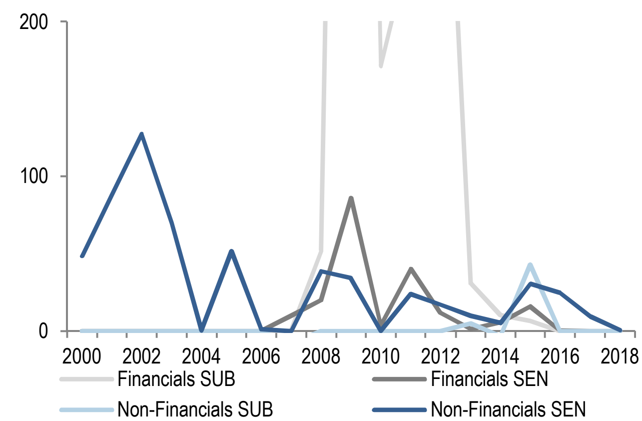
We can also look at the fallen angel rate and credit loss for each particular sector, as opposed to their contribution to the overall benchmark levels. Senior non-financials fallen angels rates have averaged 2.1% since 2000 with an average credit loss of 31bp, with a range of 0.2% - 6.8% and 0bp – 127bp respectively (Figure 6 and Figure 7). Senior financials have had the lowest credit risk over time, with an average fallen angel rate of just 0.6%, and a loss of 10bp.

Figure 6: Fallen Angels Rate by Asset Class, %



Source: J.P. Morgan, Markit Group.

Figure 7: Credit Losses by Asset Class, bp



Source: J.P. Morgan, Markit Group. Financials SUB equals 1103bp in 2009, 425bp in 2012.

Looking at which ratings see the most fallen angels, the vast majority of fallen angels were BBB-rated at the start of the year they were downgraded (Figure 8). Credit deterioration tends to be fairly gradual, and so this should not come as any great surprise. The exception was 2009, when roughly half of the overall fallen angel rate came from single-A rated paper. Most of this was bank T1/2, as discussed above,

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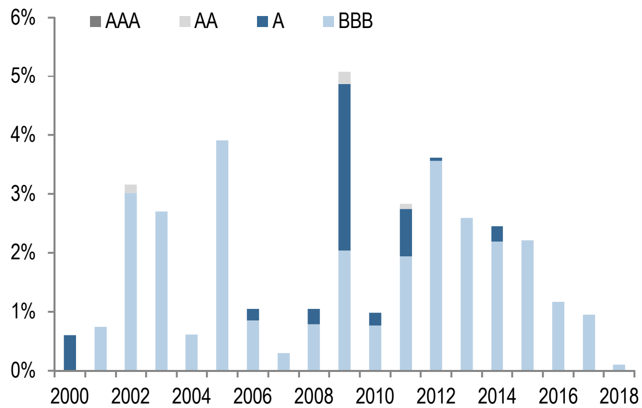
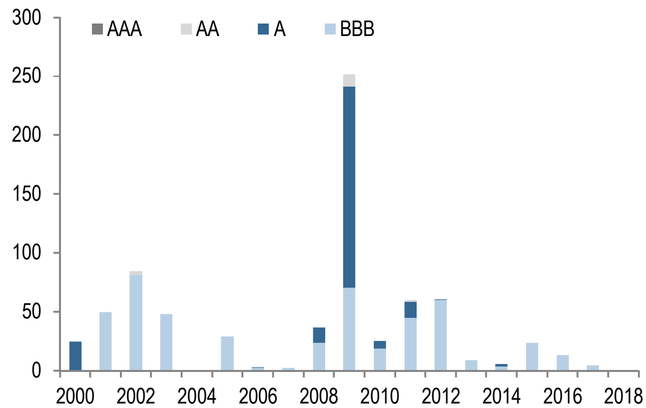
which in hindsight were rated too highly given thin CET1 cushions pre-crisis combined with off-balance sheet leverage. As a result, single-As have disproportionately contributed to portfolio losses historically, although we would not expect this to be repeated looking forward (Figure 9).

Figure 8: Fallen Angel Rates Contribution by Rating, %



Source: J.P. Morgan, Markit Group.

Figure 9: Credit Losses Contribution by Rating, bp



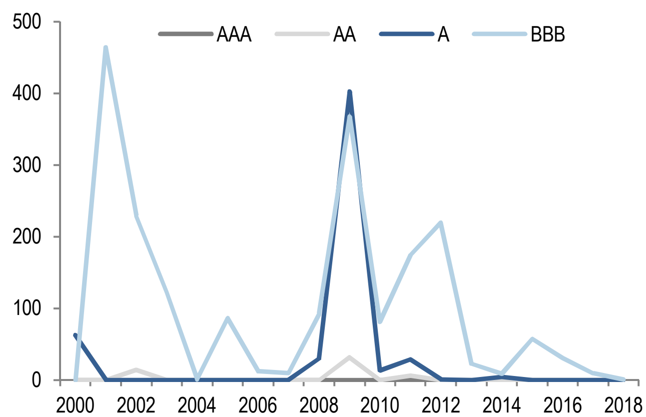
Source: J.P. Morgan, Markit Group.

Since 2000, the fallen angel rate for BBBs has averaged 5.3%, resulting in a credit loss of 105bp (Figure 10 and Figure 11). The range has been 0.0% - 11.9% and 0bp - 464bp respectively. The averages for single-As are 0.6% and 29bp, with a range of 0.0% - 6.5% and 0bp – 403bp.

Figure 10: Fallen Angel Rate by Rating, bp

Source: J.P. Morgan, Markit Group.

Figure 11: Credit Loss by Rating, bp



Source: J.P. Morgan, Markit Group.

Fallen angel rates could be higher in the next recession

Since the financial crisis, the composition of the investment grade market has changed radically. The BBB space has swelled from €191bn at the start of 2009 to €922bn today, while the volume of higher rated credit has only just returned to pre-crisis levels (Figure 12). There has also been a more modest shift towards non-financials, which have grown from 45.6% of the index notional to 59.3%, partially due to the shrinking volume of subordinated financials.

In our view, this means that downgrade rates could be higher in the next recession than during previous crises, even if the downturn is fairly modest. To demonstrate

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Scenario analysis (2012)

	Fallen Angel Rate	Average Loss
AAA	0.0%	0.0%
AA	0.0%	0.0%
A	0.1%	-6.1%
BBB	12.6%	-17.3%

Scenario analysis (2012/2009)

	Fallen Angel Rate	Average Loss
AAA	0.0%	0.0%
AA	0.0%	-45.9%
A	0.1%	-55.7%
BBB	12.6%	-31.6%

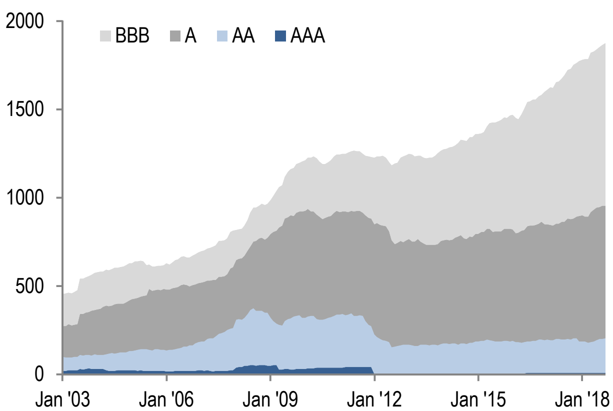
this, we can analyse the impact of a 2012-style recession on the current index rating composition, during which Eurozone GDP growth troughed at -1.6% YoY. We do not control for the change in the sector composition, as most of the sectoral shift occurred between 2009 - 2012, and in any case it is very difficult to control for factors such as the growth of the new (and untested) corporate hybrid and bail-in bank senior asset classes over the past six years.

In this scenario, we would expect a fallen angel rate of approximately 6.3% over one year, which is even higher than the 5.1% seen during the financial crisis. However, based on historical figures, we estimate that credit loss rates would be relatively modest at 108bp. This is comparable to the loss during 2002, which was a relatively 'normal' recession.

That said, in our view, this probably underestimate the true loss. The next recession could see somewhere in the region of €100-120bn of BBB-rated paper downgraded to high yield, which is almost three times as much in absolute terms as the previous worst year. The ability of the high yield market to absorb this much paper is completely untested, as it could add more than a third to the current market notional of €300bn at a time when risk assets are generally being sold.

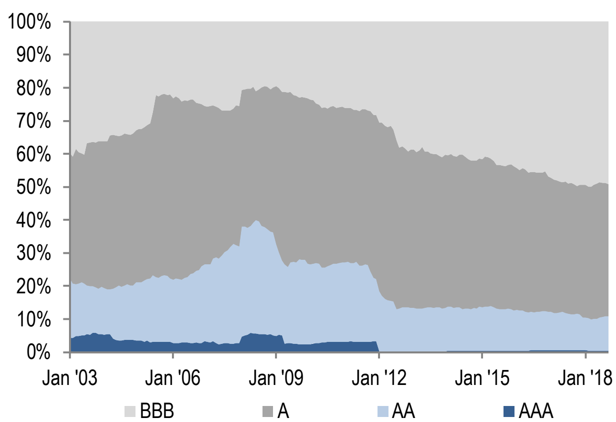
This raises the possibility that clearing prices may have to be lower than during the Eurozone crisis, even if the macroeconomic scenario is similar. If we use 2012 fallen angel rates, but average prices by rating from 2009, we estimate that portfolio credit losses from fallen angels could be closer to 200bp in the next recession.

Figure 12: European Investment Grade Notional by Rating, €bn



Source: J.P. Morgan, Markit Group.

Figure 13: European Investment Grade Notional by Rating, %



Source: J.P. Morgan, Markit Group.

Vintage analysis

An alternative way of looking at fallen angel rates is cumulative downgrades for each vintage year of new issues (Table 1). This is slightly different from our usual approach of looking at annual cohorts of the entire investment grade universe, as it assumes that investors hold bonds to maturity rather than rebalancing them every year. While the conclusions are similar to our older methodology, we believe this shines an additional spotlight on the point in the cycle when investors should be participating in primary.

For the sake of simplicity, the '1yr' fallen angel rate includes all bonds which were downgraded by the end of the following year. For example, a bond issued in 2000 which is downgraded in 2001 is considered to have fallen within one year, regardless

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of the exact month of issue. It is therefore really a 1 ½ year rate, which is adjusted for in our annualised figures. The equivalent adjustment is made to all other time periods. We also adjust the annualized figures for the shrinking size of each vintage over time due to redemptions and tenders, with the average maturity of new issues varying between 5 - 8 years.

Table 1: Cumulative fallen angel rates by vintage

	1yr	3yr	5yr	7yr	10y
2000	2.82%	11.36%	12.11%	12.74%	12.74%
2001	3.30%	7.69%	9.67%	9.67%	10.58%
2002	2.72%	6.91%	7.33%	8.64%	8.64%
2003	0.00%	4.96%	5.20%	9.32%	11.33%
2004	4.02%	5.14%	9.18%	13.25%	16.83%
2005	2.73%	4.36%	12.97%	22.47%	23.72%
2006	2.84%	9.98%	12.62%	13.52%	15.13%
2007	1.43%	5.76%	9.16%	10.89%	12.11%
2008	3.47%	4.64%	6.37%	8.16%	8.16%
2009	1.41%	7.60%	9.72%	9.87%	
2010	3.23%	7.48%	8.34%	8.87%	
2011	2.40%	8.26%	9.50%	9.50%	
2012	3.50%	6.01%	8.23%		
2013	5.38%	8.83%	8.83%		
2014	4.47%	6.72%			
2015	0.93%	2.90%			
2016	1.34%				
2017	0.51%				
2018	0.00%				
Average	**2.58%**	**6.79%**	**9.23%**	**11.41%**	**13.25%**

Source: J.P. Morgan, Markit Group.

Unsurprisingly, vintages issued before the financial crisis had a slightly higher fallen angel rate across most time periods. For example, the 5yr downgrade rate for bonds issued between 2000 and 2007 is 9.8%, compared with 8.5% for those issued from 2008 - 2013. The small exception is 1yr and 3yr fallen angel rates for the 2012 - 2013 vintages, which were affected by the later stages of the Eurozone crisis followed by the commodity crisis.

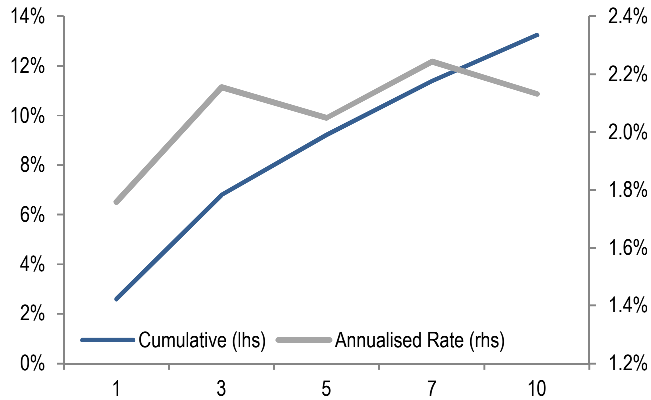
According to our analysis, the best time to buy new issues is in the immediate aftermath of a recession. Not only are spreads wider, but the issuers who are able to access the market are also generally higher quality. Bonds issued within one year of either a US or Euro Area recession have had a 5y fallen angel rate of 7.6%, compared with 9.2% for all vintages. By contrast, bonds issued in the late stage of the business cycle such as 2000 and 2005/6 have had the highest 5y downgrades rates, in all cases in excess of 12%.

Looking at the averages across all vintages, we can estimate a profile for cumulative fallen angel rates over time. On average, 2.6% of new issues are downgraded to high yield within one year of issue (Figure 14). This rises to 13.3% by ten years, although this number is arguably slightly inflated as it only includes pre-crisis vintages for obvious reasons.

After the adjustments mentioned above, the annualized fallen angel rate is relatively steady across the 3 - 10y time periods. However, it increases sharply from 1.8% to 2.2% between 1y and 3y, which implies that relatively few bonds are downgraded to high yield shortly after being issued.

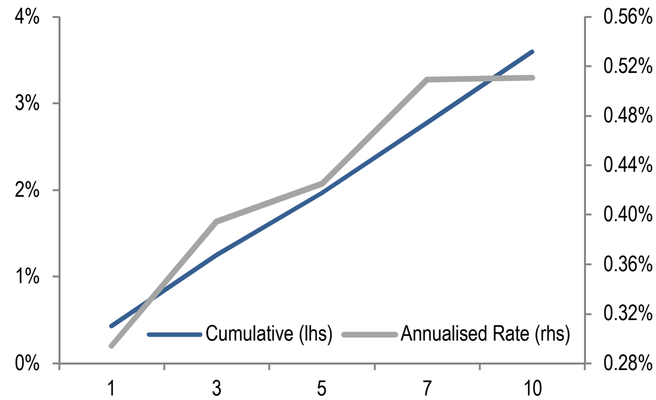
It is a similar story for cumulative credit losses (Figure 15). The average vintage loses 43bp from fallen angels in the first year from issue. This rises to 3.6% over ten years, which translates to an adjusted annualised rate of 51bp. Again, however, this is impacted by compositional biases for the longer time periods.

Figure 14: Cumulative Fallen Angel Rates by Years since Issue, %



Source: J.P. Morgan, Markit Group.

Figure 15: Cumulative Credit Loss by Years since Issue, %



Source: J.P. Morgan, Markit Group.

We can also look at each vintage by rating (Table 2 and Table 3). This is especially useful, because looking just at the rating in the year a bond was downgraded exaggerates the safety of single-As, which tend to transition through BBB on their way to high yield.

We find that A-rated bonds have a much lower 1yr fallen angel rate than BBBs at 1.2% versus 6.7%. However, the two rating buckets converge in riskiness over time on a ratio basis, with a difference of 14.8% vs 24.5% by ten years. That said, we should again note that this is impacted by A-rated subordinated financials in the pre-crisis vintages, which had a high downgrade rate.

Broadly speaking, we also find that recession year vintages have a lower than average cumulative fallen angel rate over time for any given rating. In our view, this means that the effect at an index level is not just coming from a shift in issuance patterns towards single-As during periods of economic stress. However, the cyclicality is arguably stronger in the BBB space, which likely reflects that the most leveraged deals tend to come later in the cycle.

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Table 2: Cumulative Single-A Fallen Angel Rates by Vintage

	1yr	3yr	5yr	7yr	10y
2000	1.97%	15.92%	15.92%	17.24%	17.24%
2001	2.19%	3.29%	4.94%	4.94%	6.58%
2002	0.00%	1.74%	1.74%	4.07%	4.07%
2003	0.00%	0.88%	0.88%	6.85%	8.31%
2004	0.00%	0.00%	5.60%	8.13%	9.53%
2005	2.16%	2.16%	15.62%	28.57%	28.57%
2006	0.00%	12.09%	14.51%	16.77%	18.82%
2007	0.74%	10.05%	18.09%	21.44%	22.34%
2008	8.42%	10.16%	14.91%	17.63%	17.63%
2009	0.98%	7.60%	10.48%	10.48%	
2010	1.41%	3.65%	5.06%	5.06%	
2011	0.96%	2.57%	3.54%	3.54%	
2012	0.53%	0.53%	1.23%		
2013	2.53%	2.53%	2.53%		
2014	0.00%	0.00%			
2015	0.00%	1.45%			
2016	0.00%				
2017	0.00%				
2018	0.00%				
Average	**1.22%**	**4.67%**	**8.22%**	**12.06%**	**14.79%**

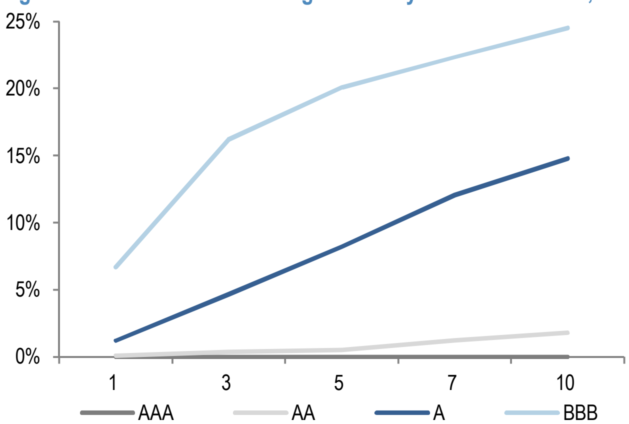
Source: J.P. Morgan, Markit Group.

Table 3: Cumulative BBB Fallen Angel Rates by Vintage

	1yr	3yr	5yr	7yr	10y
2000	14.63%	29.26%	35.11%	35.11%	35.11%
2001	6.95%	21.70%	25.86%	25.86%	25.86%
2002	6.94%	16.09%	17.14%	18.40%	18.40%
2003	0.00%	16.22%	17.09%	20.29%	24.72%
2004	15.01%	19.18%	24.24%	31.62%	39.13%
2005	5.59%	11.34%	16.27%	25.30%	29.74%
2006	7.85%	14.38%	19.05%	19.05%	19.94%
2007	5.95%	11.08%	13.78%	13.78%	18.38%
2008	4.01%	9.42%	9.42%	9.42%	9.42%
2009	4.45%	13.58%	15.36%	16.10%	
2010	9.67%	21.14%	22.29%	24.21%	
2011	7.21%	26.01%	28.94%	28.94%	
2012	8.18%	14.53%	19.24%		
2013	9.48%	17.18%	17.18%		
2014	9.00%	13.54%			
2015	1.92%	4.73%			
2016	2.75%				
2017	0.83%				
2018	0.00%				
Average	**6.69%**	**16.21%**	**20.07%**	**22.34%**	**24.52%**

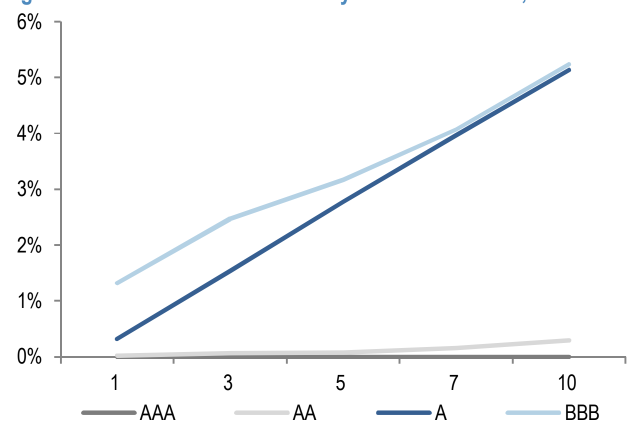
Source: J.P. Morgan, Markit Group.

Figure 16: Cumulative Fallen Angel Rates by Years since Issue, %



Source: J.P. Morgan, Markit Group.

Figure 17: Cumulative Credit Loss by Years since Issue, %



Source: J.P. Morgan, Markit Group.

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Finally, we can break down each cohort by sector. The results of this analysis are shown in Table 4, Table 5, Table 6, and Table 7 below.

Table 4: Cumulative Senior Financials Fallen Angel Rates by Vintage

	1yr	3yr	5yr	7yr	10y
2000	0.00%	0.00%	0.00%	0.00%	0.00%
2001	0.00%	0.00%	0.00%	0.00%	0.00%
2002	0.00%	0.00%	0.00%	3.72%	3.72%
2003	0.00%	0.00%	1.13%	1.13%	1.13%
2004	0.00%	0.00%	8.28%	8.28%	8.28%
2005	0.00%	0.00%	8.53%	10.42%	10.42%
2006	1.79%	4.17%	4.17%	4.17%	4.17%
2007	1.77%	2.44%	3.12%	3.12%	3.12%
2008	1.65%	1.65%	1.65%	1.65%	1.65%
2009	0.40%	7.80%	8.60%	8.60%	
2010	0.65%	2.18%	2.18%	2.18%	
2011	2.00%	2.00%	2.00%	2.00%	
2012	4.01%	4.01%	4.01%		
2013	5.74%	7.44%	7.44%		
2014	2.51%	3.51%			
2015	0.00%	0.00%			
2016	0.00%				
2017	0.00%				
2018	0.00%				
Average	**1.14%**	**2.20%**	**3.65%**	**3.77%**	**3.61%**

Source: J.P. Morgan, Markit Group.

Table 5: Cumulative Sub Financials Fallen Angel Rates by Vintage

	1yr	3yr	5yr	7yr	10y
2000	0.00%	0.00%	0.00%	0.00%	0.00%
2001	0.00%	0.00%	0.00%	0.00%	0.00%
2002	0.00%	0.00%	0.00%	0.00%	0.00%
2003	0.00%	0.00%	0.00%	11.81%	15.31%
2004	0.00%	0.00%	4.49%	13.29%	19.57%
2005	4.88%	6.28%	24.27%	42.40%	42.40%
2006	0.00%	22.15%	31.03%	33.49%	39.03%
2007	1.32%	16.36%	27.70%	36.28%	36.28%
2008	17.49%	22.38%	35.68%	44.84%	44.84%
2009	14.90%	39.87%	55.61%	55.61%	
2010	10.92%	30.94%	35.95%	35.95%	
2011	5.70%	38.08%	38.08%	38.08%	
2012	0.00%	12.85%	12.85%		
2013	14.77%	14.77%	14.77%		
2014	11.23%	11.23%			
2015	0.00%	6.18%			
2016	3.07%				
2017	0.00%				
2018					
Average	**4.68%**	**13.82%**	**20.03%**	**25.98%**	**21.94%**

Source: J.P. Morgan, Markit Group.

Table 6: Cumulative Senior Non-Fin Fallen Angel Rates by Vintage

	1yr	3yr	5yr	7yr	10y
2000	4.47%	17.96%	19.15%	20.15%	20.15%
2001	4.22%	9.81%	12.34%	12.34%	13.50%
2002	3.69%	9.40%	9.96%	10.64%	10.64%
2003	0.00%	10.03%	10.03%	11.34%	13.32%
2004	7.91%	10.11%	11.90%	15.62%	19.58%
2005	2.63%	5.36%	6.68%	13.79%	16.75%
2006	0.00%	3.03%	4.33%	5.05%	5.77%
2007	1.17%	3.72%	5.80%	5.80%	8.80%
2008	1.03%	2.41%	2.41%	3.95%	3.95%
2009	0.95%	5.18%	6.98%	7.22%	
2010	4.50%	8.07%	8.89%	10.27%	
2011	2.38%	10.31%	13.01%	13.01%	
2012	3.49%	6.82%	10.79%		
2013	3.30%	8.69%	8.69%		
2014	4.45%	8.20%			
2015	0.98%	3.45%			
2016	1.98%				
2017	0.86%				
2018					
Average	**2.67%**	**7.66%**	**9.35%**	**10.76%**	**12.49%**

Source: J.P. Morgan, Markit Group.

Table 7: Cumulative Sub Non-Fin Fallen Angel Rates by Vintage

	1yr	3yr	5yr	7yr	10y
2000					
2001					
2002					
2003					
2004					
2005					
2006	41.11%	41.11%	41.11%	41.11%	41.11%
2007					
2008					
2009					
2010	0.00%	0.00%	0.00%	0.00%	
2011	0.00%	0.00%	0.00%	0.00%	
2012	0.00%	0.00%	0.00%		
2013	11.54%	11.54%	11.54%		
2014	2.94%	2.94%			
2015	6.67%	6.67%			
2016	0.00%				
2017	0.00%				
2018					
Average	**6.92%**	**8.89%**	**10.53%**	**13.70%**	**41.11%**

Source: J.P. Morgan, Markit Group.

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