

Bond investors beware fallen angels

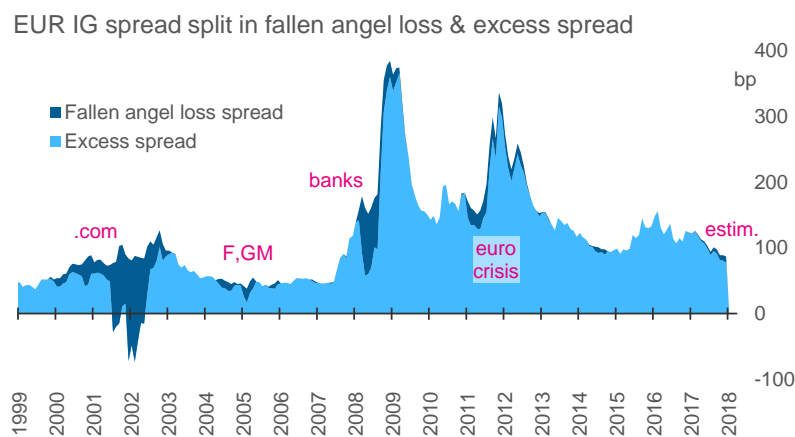
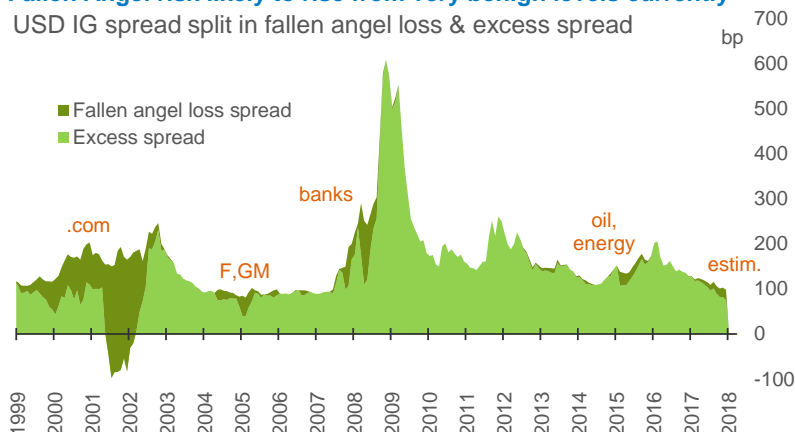
Impact of credit migration from Investment Grade to High Yield

Key points

- Credit downgrades from investment grade into high yield, or fallen angels, are a key risk for investment grade investors; in comparison to default risk for high yield investors.
- Fallen angel risk is currently benign yet if corporate earnings start to wane investor concerns are likely to resurface. Moreover, the material rise in BBB-rated credits over the past decade, makes fallen angel risk very pertinent.
- We present a method that estimates the potential loss arising from fallen angels, based on an empirical analysis of credit indices. In a scenario of rating deterioration fallen angel risk could erode 10-25% of IG spreads over the next 12-18 months.
- Funds that have the discretion to avoid forced selling can capture the credit carry more efficiently through the downgrade volatility as fallen angel bond prices tend to rebound once they have entered HY territory.
- Our approach also compliments traditional high yield excess spread measures with comparable ones for investment grade, facilitating relative value comparisons across the credit spectrum.

Exhibit 1

Fallen Angel risk likely to rise from very benign levels currently



Source: Inter Continental Exchange (ICE) and AXA IM Research

Introduction

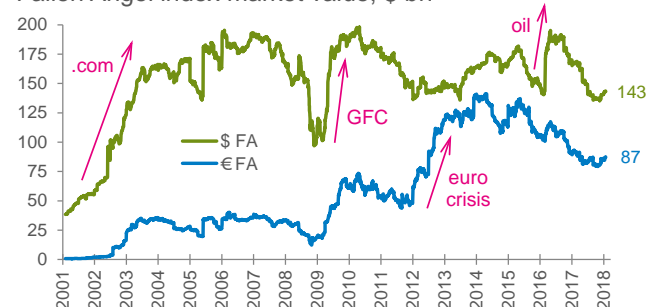
Investment grade (IG) credits would typically ‘jump to default’ only under unusual circumstances, like fraud in the case of Enron and Parmalat, or an outright systemic meltdown as was the situation with banks during the global financial crisis. So in comparison to default risk borne by high yield (HY) investors, rating deterioration is a more dominant risk investment grade investors. A corporate that moves from IG to HY rating is referred to as a fallen angel, while the reverse transition from HY to IG is referred to as a rising star.

Fallen angel risk can be quite contained over prolonged periods of time but it can also flare up and affect IG returns materially. The credit environment remains benign, with the upgrade to downgrade ratio still positive at this point in the cycle. Fallen angel volumes have declined by circa \$50bn in US dollar credit and by circa \$60bn equivalent in euro credit (*Exhibit 2, top*), translating to a twenty year lows in USD credit and a ten year low in EUR credit as a share of the HY market (*Exhibit 2, bottom*).

Exhibit 2

Fallen angel volumes have ticked up but remain near their lows as a proportion of the HY market

Fallen Angel index market value, \$ bn



Fallen Angel index market value as % of HY



Source: ICE and AXA IM Research

The key question, however, is what lies ahead? If the current strength in corporate earnings starts to ebb, investor concerns about fallen angels are likely to return, particularly in USD credit where corporate leverage is at historic highs. A recent European company downgrade from IG to HY due to accounting irregularities also serves as an apt reminder of the presence of fallen angel risk even outside bear credit cycles.

In this note, we present a method for estimating the mark-to-market impact of fallen angels, based on an empirical analysis of USD and EUR credit indices. The analysis confirms the current benign state of fallen angel risk but also suggests that in an adverse scenario of credit rating deterioration, fallen angel risk could erode

as much as 10-25% of the IG spread over the next 12-18 months. We assume a comparable estimate for GBP credit, although the relevant fallen angel indices to replicate this analysis are not available in GBP. That said, proxy measures of fallen angel risk like the share of bonds within IG that trade wider than BB-rated credits, suggest that fallen angel cycles in GBP credit compare to those in USD or EUR.

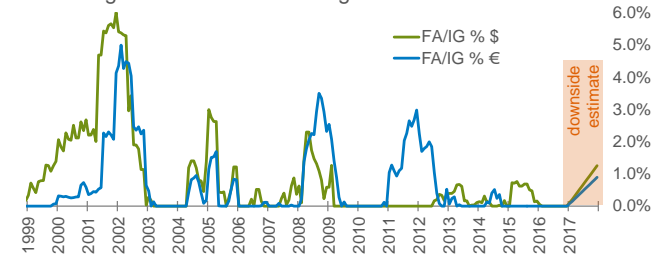
Therein also lies the risk for benchmarked funds that tend to replicate credit indices. In the case of most mainstream IG indices, a credit will lose its IG status and drop into HY once its average rating enters BB+ territory. The affected bonds have to be sold at the point of IG index exclusion, at the latest, as is often dictated by investor mandates. Historically, this tends to be the point where credit spreads peak and bond prices trough, resulting in the highest crystallised loss. The smaller size of the HY market and investor base in comparison to IG markets and, often, concentrated selling, all contribute to such a market dynamic. Funds that have the discretion to avoid forced selling can instead capture the credit carry more efficiently through the downgrade volatility (fallen angel bond prices tend to rebound once they have dropped into HY territory as was the case for telecom and utility corporates in the periphery during the eurozone crisis). This way an investor can avoid the inherent asymmetry of credit risk, namely earning a few percentage points of carry vs losing tens of percentage points through forced selling or default.

In the sections that follow we present our key findings and explain our methodology.

Exhibit 3

Fallen Angels in Investment Grade currently minimal

Fallen angel share of investment grade over 12M



Source: ICE and AXA IM Research

Key findings

The most severe fallen angel cycle took place after the dotcom bubble in the early 2000s with the telecomm and technology sectors at the epicentre. While the spread widening was not as dramatic as what was seen during the global financial crisis in 2007-2008, the rating migration into HY was severe and protracted (*Exhibit 3*). This resulted in a complete erosion of IG spreads for both USD and EUR credit due to fallen angel risk (*Exhibit 1*). Subsequently we saw a flare up in fallen angel risk in 2004-2005 in the auto sector, led by the Ford and GM downgrades. This was dwarfed by the next and much more severe episode in 2008-2009 as global financials got caught up in the US mortgage market collapse. Two further episodes have taken place, namely the eurozone crisis in 2011-2012 that affected sovereigns, banks and corporates in the periphery and most recently in 2015-

2016 due to the oil and commodities correction which affected the energy and basic resource industries and was most prominent in the US. The next hotspots for downgrades may be the consumer, retail and media sectors where the structural migration online is putting material pressure on traditional business models.

Exhibit 4

Moody's rating migration rate matrix (Fallen Angel territory shaded)

| 1y | AAA | AA | A | BBB | BB | B | CCC | D |
|-----|--------|--------|--------|--------|--------|--------|-------|---------|
| AAA | 87.56% | 8.05% | 0.57% | 0.07% | 0.02% | 0.00% | 0.00% | 0.00% |
| AA | 0.83% | 85.23% | 8.40% | 0.43% | 0.06% | 0.04% | 0.02% | 0.02% |
| A | 0.05% | 2.51% | 86.69% | 5.41% | 0.49% | 0.11% | 0.04% | 0.05% |
| BBB | 0.03% | 0.15% | 4.21% | 85.49% | 3.88% | 0.71% | 0.16% | 0.17% |
| BB | 0.01% | 0.04% | 0.43% | 6.11% | 76.18% | 7.25% | 0.71% | 0.91% |
| B | 0.01% | 0.03% | 0.15% | 0.45% | 4.76% | 73.49% | 6.61% | 3.39% |
| CCC | 0.00% | 0.01% | 0.03% | 0.09% | 0.39% | 6.71% | 67.43 | 8.38% |
| D | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 100.00% |

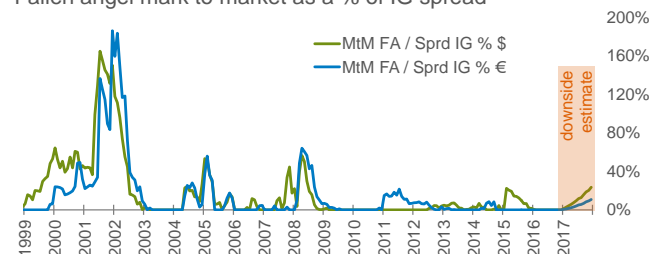
Source: Moody's and AXA IM Research

The forward looking part of our analysis assumes that a deterioration in the rating cycle could trigger a degree of downgrades that reflects Moody's historical rating migration probabilities (Exhibit 4). This would drive fallen angel volumes higher within IG credit (Exhibit 3, shaded) and ditto for fallen angel mark-to-market losses (Exhibit 5, shaded), potentially eroding 10-25% of IG spreads over the next 12-18 months as a result. In such a scenario, IG excess spreads should continue trending lower towards their pre-global financial crisis levels, similar to what we are currently witnessing in HY spreads (Exhibit 6).

Exhibit 5

Fallen Angel mark to market losses in credit indices currently negligible

Fallen angel mark to market as a % of IG spread

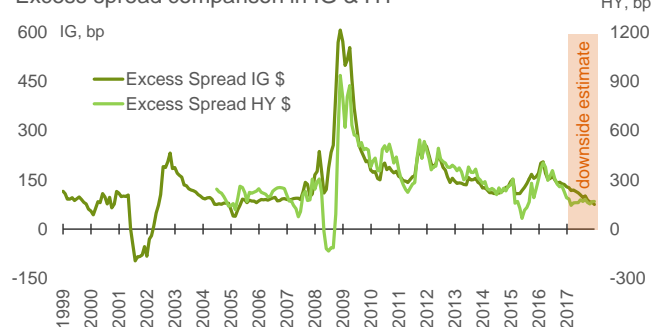


Source: ICE and AXA IM Research

Exhibit 6

Excess spreads are on a narrowing path

Excess spread comparison in IG & HY



Source: ICE, Moody's and AXA IM Research

Methodology

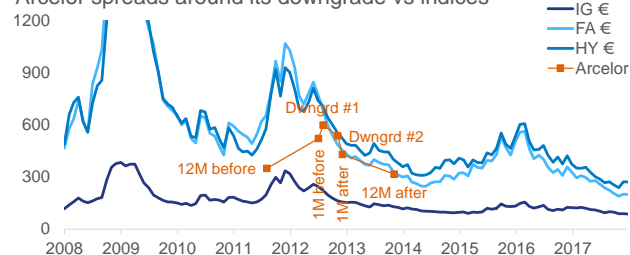
For each market, namely USD and EUR credit, we utilise the IG, HY and fallen angel credit indices as follows:

- **Step 1: Migration rate.** We calculate the share of the IG index that migrates into fallen angel territory over a 12-month period. This migration rate is the ratio of the change in face value of the fallen angel index over a 12-month period to the face value of the IG index at the start of this 12-month period. When the change is negative (the fallen angel index shrinks) the ratio is floored at zero (Exhibit 3).
- **Step 2: Migration impact.** To calculate the mark-to-market impact of fallen angels we make the working assumption that the associated spread widening in every case is equal to the spread difference between the IG index and the HY index 12 months hence. We have tested this assumption against a few high profile fallen angel cases from recent years. The case of Arcelor and its transition from IG to HY is shown in Exhibit 7. While not every case exhibits the close match with index spreads that Arcelor did during its transition to a fallen angel, the majority of cases traced a spread path that remained within the range of the IG and HY index spreads, suggesting that our assumption is aptly conservative.

Exhibit 7

Arcelor spread repricing compared to Investment Grade, Fallen Angel and High Yield index spreads

Arcelor spreads around its downgrade vs indices



Source: ICE and AXA IM Research

- **Step 3: Migration loss and excess spread.** Once estimated, the mark-to-market impact of fallen angel risk is expressed as a fraction of the IG index spread (Exhibit 5) in the same manner that we express loss due to defaults as a fraction of the HY index spread. The remaining spread between actual index spread and loss spread (whether due to default risk or fallen angel risk) is the excess spread that investors should expect to earn over economic losses. These two components, the loss spread and the excess spread, are shown in Exhibit 1.
- **Step 4: Forward looking estimates.** The last step is to obtain a forward looking estimate of fallen angel mark-to-market risk by estimating the ratings migration rate 12 months forward. To that effect, we utilise Moody's historical data for average one-year rating migration rates, based on the 1970-2016 company cohorts¹ (Exhibit 7). We adjust these migration rates first by the respective market share of each IG rating within the overall market and second

¹ Moody's Annual Default Study: "Corporate Default and Recovery Rates, 1920-2016", 15 Feb 2017

by the composite purchasing managers' index (PMI) of each region, scaling up for PMIs below 50 and scaling down for PMIs above 50. We do the PMI adjustment in order to include a business cycle factor in Moody's data that represents a 'through the cycle' average.

Having established an estimate for the fallen angel migration rate (the equivalent to default rate in HY), we also need to set an estimate for the fallen angel mark to market impact (the equivalent to '1 - Recovery Rate' in HY). To that effect we make a judgment on the degree of deterioration in fallen angel mark-to-market losses as they rise from current levels towards their historical average. We assume an increase of 20% of the range between current level and historical average (estimate=current+0.2*(average - current)).

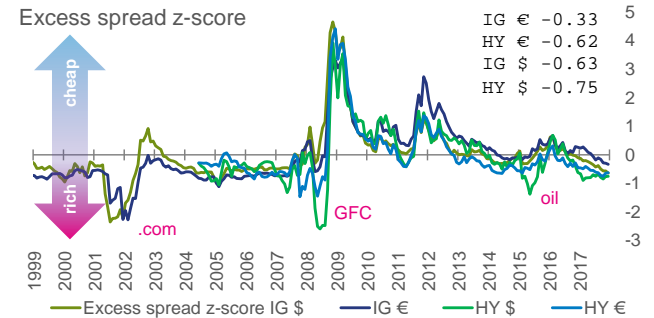
Relative valuation signals

The excess spread measure for IG credit based on the fallen angel analysis complements the traditional excess spread measure that nets default risk of HY spreads, allowing for a consistent comparison of relative value across credit segments. To facilitate such a comparison

we normalise excess spreads into a z-score as we demonstrate in *Exhibit 8*. Current z-score readings suggest that credit valuations are rich across the board, with USD credit richer than EUR credit and HY credit richer than IG credit (see ranked z-scores in legend of *Exhibit 7*). Valuations notwithstanding, we maintain our preference for HY credit over IG credit amid rising rates, due to the superior spread carry and lower susceptibility to duration risk of the former.

Exhibit 8

HY is richer than IG and USD credit is richer than EUR credit



Source: ICE, Moody's and AXA IM Research

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