

FIXED INCOME ASSUMPTIONS

Lower rates for even longer

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IN BRIEF

- Anticipating continued central bank dovishness, we shift our equilibrium interest rates lower across major G4 markets and extend the time horizon over which we expect rate normalization.
- Cash rates are still far below equilibrium in markets outside the U.S. and are only expected to converge very gradually to equilibrium. This extended normalization creates a significant drag to expected returns in the eurozone and the UK.
- Long core duration assets across all major markets see poor returns in absolute terms and relative to cash, as starting yield curves are very flat.
- In the corporate bond market, duration has risen and quality has deteriorated. Expected investment grade returns are lower, primarily due to a renewed drag from interest rate normalization.
- Inclusion of the Gulf Cooperation Council in the J.P. Morgan EMBI Global Diversified Index has increased the quality and duration of the emerging market debt index, but expected total returns have come down due to lower rates and tighter starting spreads.

Please note that our long-term capital market assumptions were calculated as of September 30, 2019 and published in November 2019, and thus do not reflect recent extreme price moves in many asset markets resulting from the ongoing COVID-19 disruption. Please reach out to Itcma.inquiries@jpmorgan.com for more information.

OVERVIEW

Central bank dovishness was a defining feature of G4 government bond markets over the last year. Growing trade uncertainty and the Federal Reserve's (Fed's) dovish pivot earlier in 2019 pushed yields lower, with 10-year U.S. Treasury yields falling from a high of 3.25% to an early September low of 1.45%. Outside the U.S., central banks adopted dovish policies across major developed markets as manufacturing sector weakness persisted and inflation remained dormant. The average yield on G4 10-year government bonds fell 140 basis points (bps) over the last year. Consistent with the relentless flattening that started last year, the yield curve continued to flatten this year. This phenomenon was especially felt in Europe, where 10-year Bund yields fell below the deposit rate for the first time in this cycle.

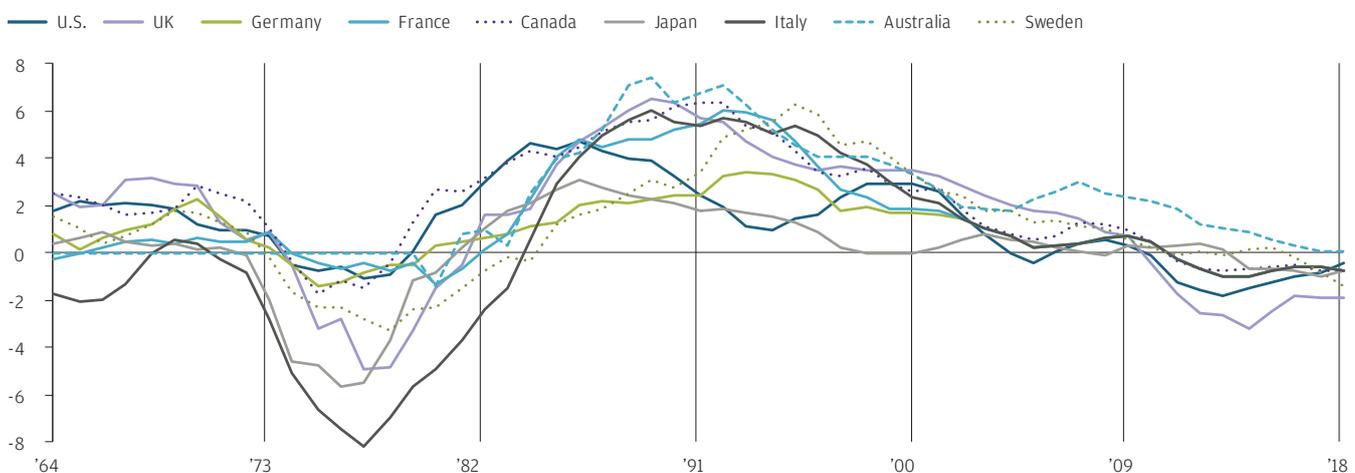
Relative to the numbers in last year's Long-Term Capital Market Assumptions (LTCMAs), we shift our equilibrium interest rates lower across major G4 markets. We also extend the time horizon over which we anticipate normalization of interest rates to play out, especially in Europe. We make these forecast changes in light of continued weak inflation and one more year of data signaling the limited power of labor market tightening to spark inflationary pressure, despite a recent pickup in wages.

As we discuss in "The failure of monetary stimulus," *2020 Long-Term Capital Market Assumptions*, in coming years central banks are likely to return to using monetary stimulus tools, including quantitative easing (QE), and interest rate policy is likely to be easier for longer as inflation remains subdued. As a result, our forecast calls for lower yields in markets outside the U.S.; we also push out the normalization pathways across all markets to acknowledge that monetary policy may be less effective in the next downturn. Real rates are likely to be suppressed over our forecast horizon relative to GDP, as there is less room for nominal policy rate cuts (**Exhibit 1**) - especially after the recent Fed rate cuts and easing measures from the European Central Bank (ECB). Lower starting bond yields across major markets, coupled with a longer period of normalization, compound the fall in expected returns (**Exhibit 2**).

This year, we introduce an explicit ranking of real cash rates across major markets (**Exhibit 3**). The U.S., Canada and Australia are ranked at the top, while Japan and Switzerland have the most negative real cash rates. Essentially, we assign a higher likelihood that U.S. policymakers will achieve their inflation mandate than policymakers in Switzerland or Japan. Cash rates are still far below equilibrium in markets outside the U.S. and are only expected to converge very gradually to equilibrium. This implies negative real cash returns in most markets outside the U.S.

Real rates follow long-term cycles

EXHIBIT 1: REAL CASH RATES, 5-YEAR AVERAGE, ACROSS DEVELOPED MARKETS



Source: Bloomberg, J.P. Morgan Asset Management; data as of December 2018.

Anticipating continued central bank dovishness, we shift our equilibrium interest rates lower across major G4 markets and extend the time horizon over which we expect rate normalization

EXHIBIT 2: STANDARD G4, IG, HY AND EMD FIXED INCOME RETURN PROJECTIONS

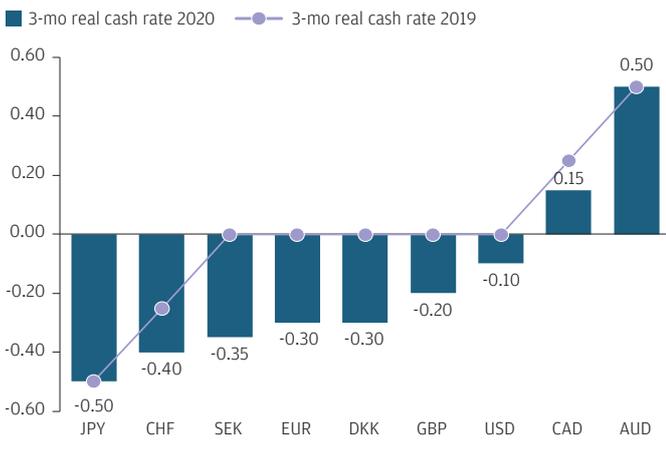
	USD		GBP		EUR		JPY	
	Equilibrium yield (%)	Return						
Inflation	2.0%		2.0%		1.3%		0.8%	
Cash	1.9%	1.9%	2.0%	1.8%	1.0%	0.6%	0.3%	0.1%
10-year bond	3.2%	2.4%	2.7%	0.8%	2.2%	0.6%	1.0%	0.3%
Long bond index^	3.5%	1.6%	2.7%	-0.8%	2.8%	-0.8%	1.0%	0.3%
Investment grade credit	4.7%	3.4%	4.4%	2.0%	3.4%	1.7%	1.3%	0.8%
High yield	7.6%	5.2%			5.8%	3.6%		
Emerging market debt*	6.6%	5.1%						

Source: J.P. Morgan Asset Management; estimates as of September 30, 2019.

^ EUR: 15y+ index, JPY: JGB Bond Index, GBP: 15y+ index, USD: 20y+ index; * EMD hard currency debt

Cash rates are still far below equilibrium in markets outside the U.S. and are only expected to converge very gradually to equilibrium

EXHIBIT 3: RANKING OF REAL CASH RATE ASSUMPTIONS ACROSS MARKETS



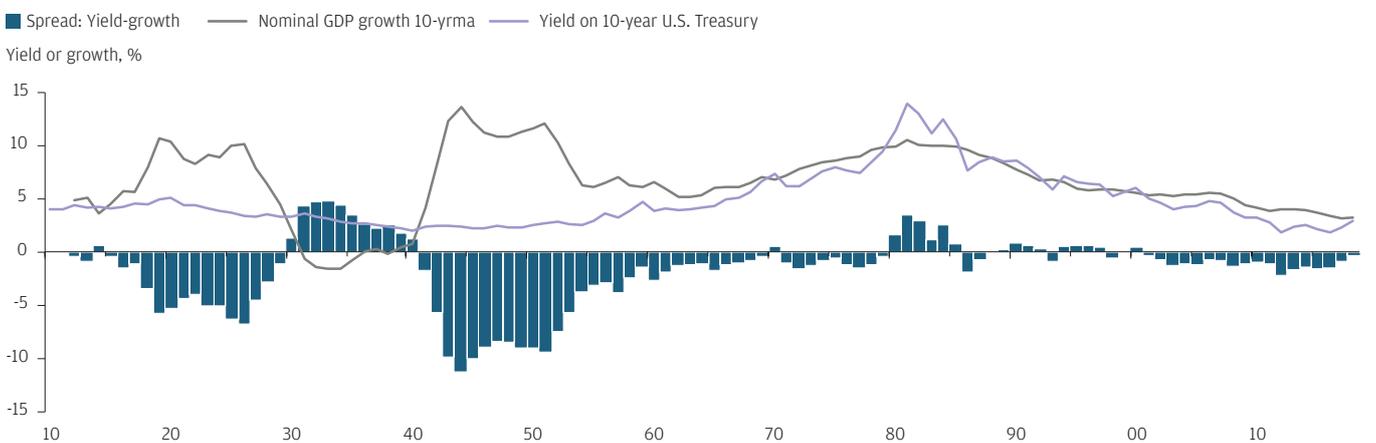
Source: J.P. Morgan Asset Management; data as of September 2019.

Our framework for long-end yield assumptions is unchanged. We anticipate a significant degree of correlation across markets, which will make it difficult for the U.S. to decouple totally from the rest of the G4. Quantitative easing, strong forward guidance, dormant inflation and unfavorable demographics all support the ongoing demand for duration. This keeps term premia depressed and curves flatter in equilibrium than was the case historically. If inflation were to rise meaningfully over the next decade (possibly due to fiscal stimulus), curves could steepen. The same could occur if policymakers focused on boosting the labor share of income as a way to address increased income inequality.

The most significant change we make this year is a downgrade to European yields across the entire yield curve as growth and inflation forecasts come down substantially. Relative to other regions, Europe sees the biggest downgrade to expected returns relative to last year.

History shows that monetary policy can keep rates lower than what would be implied by nominal GDP forecasts

EXHIBIT 4: 10-YEAR U.S. TREASURY YIELDS RELATIVE TO NOMINAL GDP GROWTH, 1910-2019



Source: Bloomberg, Robert J. Shiller, U.S. Bureau of Economic Analysis (BEA), J.P. Morgan Asset Management; data as of December 2018.

For the 2020 LTCMAs, we explored to what extent policy can distort yields relative to nominal GDP. In the 1940s, for example, long-term yields were artificially suppressed to fund the Marshall Plan and post-war spending (**Exhibit 4**). Similarly, over the coming decade, coordinated monetary and fiscal policies could keep rates lower than what is implied by our long-term nominal GDP forecasts. Moreover, the Fed's review of its framework for assessing inflation may push up inflation expectations and could lead to a similar distortion through financial repression, at least in direction if not magnitude. This would artificially depress real yields, but we would expect that to be reflected mostly through steeper curves.

U.S. RATES

We make only modest changes to our cash and 10-year yield assumptions. We reduce the U.S. cash rate by 10bps to 1.9% to reflect our view that the diminished effectiveness of monetary policy will depress real rates for a longer time frame than we thought last year. Insurance rate cuts from the Fed have brought the spot cash rate in line with our long-term equilibrium level.

Based on our new rounding methodology, we lower our U.S. 10-year yield assumption by 5bps to 3.2%. Ten-year nominal yields are expected to equilibrate to 60bps below our LTCMA forecast for nominal U.S. GDP. We extend the normalization window from three years to four years due to low inflation expectations and our view that ex-U.S. 10-year yields will take longer to normalize.

This year, we introduce an explicit framework and assumption for 10-year breakeven inflation rates. It allows us to signal a 10-year real yield assumption. Our implied 10-year real yield is 0.9%. That may look high relative to today's level of around 0%, but we note that it is half the average level experienced since the 1960s.

EUROZONE RATES

We continue to expect that the European Central Bank (ECB) will undershoot its inflation target over the forecast horizon amid a difficult economic outlook. As a result, Europe sees the largest cuts to our growth and inflation assumptions. This translates directly to a reduction in our cash yield assumption, which falls 50bps in nominal terms to 1% and 30bps in real terms to -0.3%. The yield curve slope is unchanged vs. last year at 120bps, which is 50bps flatter than the post-financial crisis average and in line with its 30-year average.

We extend the normalization window for cash rates due to the low inflation environment. Cash rates are expected to start normalizing in one year, reaching equilibrium in five years. The normalization window for 10-year yields was also extended to five years to reflect increased uncertainty that the ECB will meet its inflation target. Sweden and Denmark broadly follow the path mapped out for eurozone rates.

JAPANESE RATES

Expecting that the Bank of Japan, like the ECB, will persistently undershoot its inflation target, we cut our inflation assumption, which translates directly into a lower cash rate. Our nominal cash yield assumption falls from 0.5% to 0.3%, taking the real cash rate to -0.5%, the lowest across the major developed markets in our assumptions set.

This is also manifested in a 25bps reduction in our 10-year Japanese government bond (JGB) assumption to 1% in nominal terms and a 3m10y yield curve slope assumption unchanged at 70bps. Japan still has the steepest 10y30y curve at 50bps, reflecting yield curve control anchoring rates out to 10 years as well as the high debt-to-GDP that the Japanese government is expected to carry over the next decade. The normalization window has been pushed out to six years to reflect lower inflation expectations and the need for financial repression to support Japan's high debt stock.

UK RATES

The UK outlook remains very uncertain. Last year, we thought that the most likely outcome would be an orderly Brexit with a long transition period. At the time of writing, a general election has been agreed for mid-December and the Brexit deadline has been pushed out to early 2020. Essentially, the shape and form of Brexit will be decided indirectly through the general election. It is quite difficult to call the result of this election, given the emergence of new Brexit-related parties and their potential impact on the performance of mainstream parties. The risk of a no-deal Brexit has fallen in the short term, but it cannot be ruled out entirely. This keeps the outlook for the UK economy beholden to political outcomes and the ways they shape the future trade relationship between the UK and the euro area.

Without knowing the full details of an agreement, we focus on the medium-term outlook for the UK economy, which has a significant impact on the outlook for Gilts. Together with lower expectations for eurozone bond yields, we have also lowered our yield assumptions for the UK. We reduced our 10-year yield assumption to 2.7% from 2.75% last year. We keep the 10y30y curve flat at 0.

BUILDING BLOCKS: ANATOMY OF BREAKEVEN AND REAL YIELDS

CYCLE NEUTRAL FORECASTS

10-YR BREAKEVEN =

Average inflation expectations

We assume inflation expectations are backward looking and determined by historical realized inflation. Given our long horizon, expectations are set equal to our inflation forecasts.

+ Inflation risk premium

The additional yield on top of inflation expectations to reflect the distribution of inflation risks around the base case

+ CPI vs. RPI wedge (UK only)

10-yr implied real yield = 10-yr nominal yield - 10-yr breakeven

INFLATION-LINKED BOND RETURNS

INFLATION CARRY

Average expected inflation

+ Real yield carry

Average real yields

+/- Duration normalization

Annualized impact of normalization from current real yields to forecasted real yields

+ Roll-down

Annualized roll-down return

OTHER DEVELOPED MARKETS

In Australia, we make a modest downgrade to our inflation outlook, which nudges our cash rate assumption 20bps lower to 2.8%. Australia is still the highest yielding front end of major markets in both real and nominal terms. We steepen the yield curve slope by 20bps to bring it more in line with global yield curves. Raising the steepness to 120bps keeps the Australian 10-year yield assumption unchanged at 4%.

In Canada, we make minimal forecast adjustments amid unchanged macro assumptions. The real cash rate is modestly positive at 10bps, and the 10-year yield is reduced from 3.25% to 3.1%, slightly below the U.S., as the Canadian economy rebalances away from commodity markets.

Finally, in Switzerland we cut our growth expectations, which pushes all rate assumptions lower. We reduce our equilibrium cash rate assumption to 0.1%, the lowest in nominal terms. This translates to a -0.4% real cash rate - only Japan has a lower rate. We keep the 3m10y yield curve slope unchanged at 100bps, which is flatter than the slopes in Europe and the U.S.

INFLATION-LINKED BONDS

For the first time, we have included explicit cycle-neutral breakeven forecasts (see “Building blocks: Anatomy of breakeven and real yields”). These inform our expectations for equilibrium implied real yields, as we explain below.

The methodology starts by forecasting 10-year inflation breakevens, of which the most important component is inflation expectations (**Exhibit 5**). Using the simplifying assumption that expectations are based on realized inflation in the recent past, we rely on our inflation forecasts for this first building block. On top of this, we add an *inflation risk premium (IRP)*.

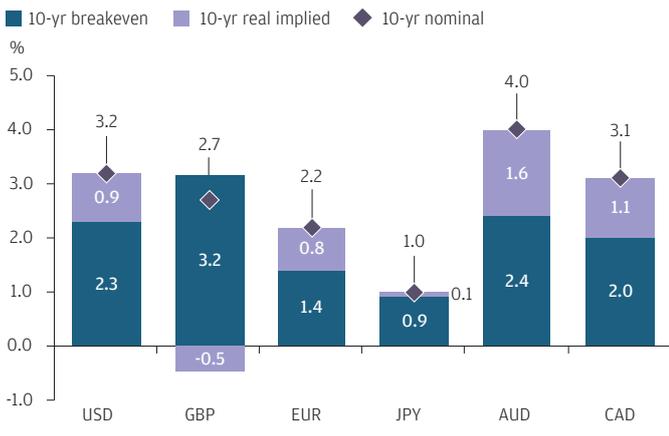
The IRP reflects the additional compensation based on the distribution of risks around the market’s base case for inflation. In reality, outside of recessionary periods, 10-year breakevens have remained very close to historical realized inflation. Across developed markets, nonrecessionary IRPs have tended to be close to or even below zero.

Over our investment horizon, however, we forecast IRPs to be a small but positive number, given a higher probability of upside risks to inflation going forward. This reflects two important factors: an expectation that fiscal policy may play a bigger role in generating inflation, and a belief that central banks may attempt to boost inflation expectations by trying to overshoot their targets outside of recessions. This combination of easier and potentially coordinated fiscal and monetary policy suggests IRPs may be marginally higher than we have seen in the post-crisis period. Across countries, we have forecast higher IRPs where inflation expectations still remain close to target, central banks have more credible toolkits and fiscal policy seems more feasible.

With a forecast for 10-year breakevens, we can now back out our 10-year implied real yields. Most of the normalization in 10-year nominal rates is coming from the real yield component. These forecasts are consistent with a slow and gentle trend higher in real rates both during and after our investment horizon. UK real rates are still expected to remain negative due to distortions from pension fund demand for inflation-linked assets. Of course, many factors, including demographics and debt burdens, will continue to weigh on real yields. That said, potentially easier fiscal policy and our structurally optimistic view on long-term growth and productivity (relative to the post-crisis period) suggest real cash expectations can rise gradually, while real rate term premia may increase from their currently very depressed (and negative) levels.

An explicit assumption for 10-year breakeven inflation rates allows us to signal a 10-year real yield assumption

EXHIBIT 5: BACKING OUT IMPLIED REAL YIELD FORECASTS



Source: J.P. Morgan Asset Management; data as of September 2019.

CREDIT

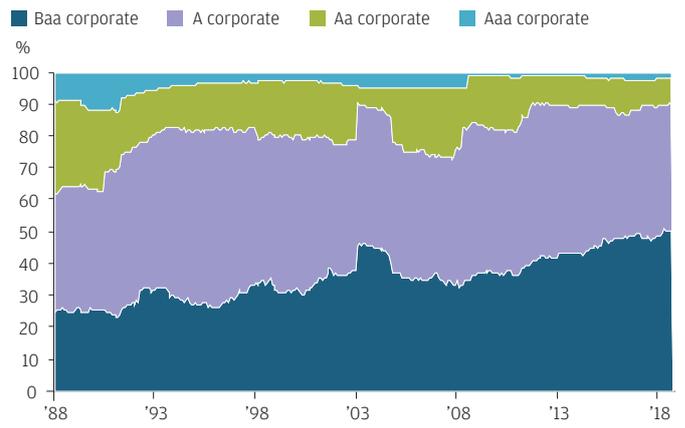
Quantitative easing, and the lower interest rates associated with this unprecedented policy tool, fundamentally changed credit markets. Throughout this cycle, companies have moved away from more costly equity financing toward debt issuance. Duration has meaningfully extended for quality bonds as companies have sought to lock in favorable rates. Unsurprisingly, total corporate leverage has increased markedly.

U.S. investment grade (IG) net corporate leverage metrics have never been higher, and average quality within the IG index has deteriorated to some extent. The BBB market size has increased consistently over the expansion and now makes up roughly half of the overall index by market capitalization, well above its 30%-35% share at the time of the 2008

financial crisis (Exhibit 6). Duration extension has been particularly pronounced among the higher quality issuers (Exhibit 7). These changes in duration and quality affect our views of fair value spreads, which assume a 165bps spread for the overall index, higher than the historical average since 1988 of 135bps.

BBBs now make up roughly half of the U.S. investment grade market

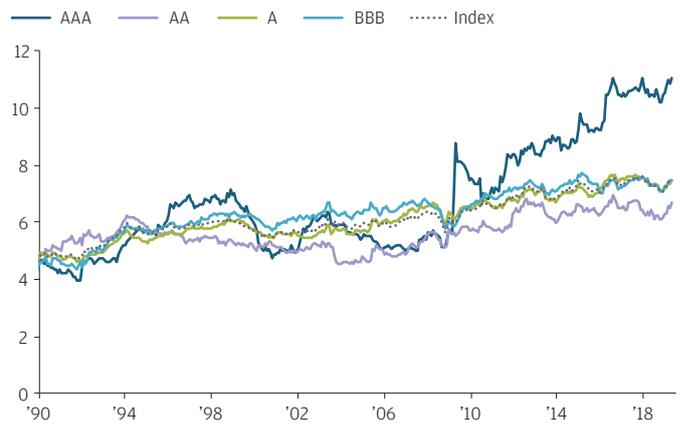
EXHIBIT 6: INCREASING SHARE OF BBBs IN THE IG MARKET



Source: Barclays, Bloomberg, J.P. Morgan Asset Management; data as of May 2019.

Duration extension has been prevalent across U.S. investment grade bonds of all ratings

EXHIBIT 7: AVERAGE DURATION BY CREDIT RATING

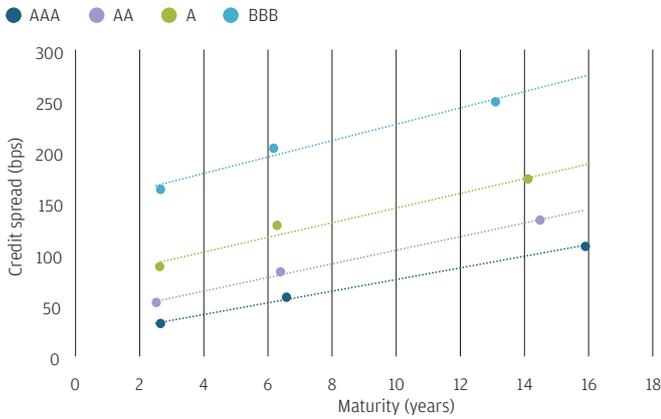


Source: Barclays, Bloomberg, J.P. Morgan Asset Management; data as of May 2019.

This year, we have also built out IG maturity curves by rating, with spread assumptions for each maturity and quality segment (Exhibit 8). In general, our spread assumptions deviate more from historical averages further out on the maturity curve. We assume higher spreads at the longer end of the curve, which has driven the majority of the index's duration extension amid higher supply.

Projected spread curves are a little steeper than historical averages

EXHIBIT 8: PROJECTED SPREAD CURVES BY BOND RATING



Source: J.P. Morgan Asset Management; data as of September 30, 2019.
 Note: Dots are point estimates of specific maturity buckets (1- to 5-yr, 5- to 10-yr, 10-yr+). Dotted lines are linear trend lines.

We lower the IG total return assumption by 110bps to 3.40%, due to a renewed drag from interest rate normalization following this year’s marked rally in Treasuries. We maintain a 25bps haircut stemming from losses due to fallen angels; the high concentration of BBB issuers in the IG market makes it likely that the next downturn will cause a significant number of bonds to downgrade into high yield (HY).

In the U.S. HY market, duration has fallen very slightly during this cycle and quality has not deteriorated as it has in the IG market. The CCC market share was initially elevated relative to past cycles but has been coming down in recent years, and the BB share has actually increased its weight over the course of the expansion (Exhibit 9). Overall, we assume HY spreads will be close to their historical average at 500bps, unchanged year-over-year.

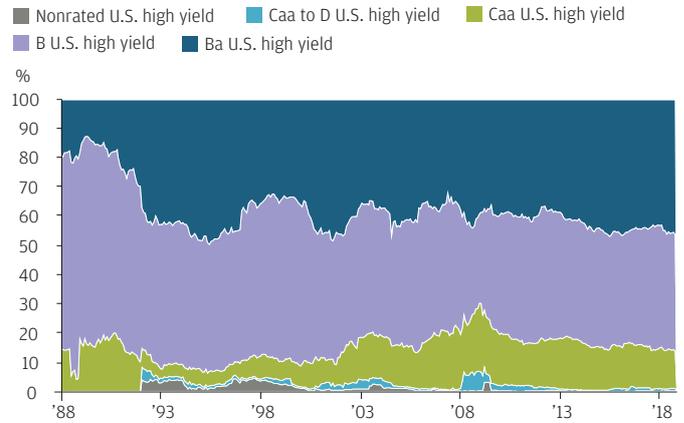
We maintain a high yield total return loss rate of 200bps¹ from defaults, unchanged from last year - we assume the historical average for default rates and recovery rates in a cycle. Overall, the total return estimate drops by 30bps to 5.2%. The drag from interest rate normalization is partially offset by a better spread valuation starting point.

Our fair value spread for emerging market hard currency debt moves up by 25bps to 350. The inclusion of the Gulf Cooperation Council in the J.P. Morgan EMBI Global Diversified Index has increased noticeably both the quality and duration of the index (see “Accounting for changes in index constituencies”). Moreover, we have assumed some of the deterioration in the quality that the index has experienced over this expansion has

¹ This loss rate is consistent with an implied default probability of 3.5% with an average loss severity of 57%.

BB rated bonds have captured a growing share of the high yield market

EXHIBIT 9: MARKET SHARE BREAKDOWN OF HIGH YIELD MARKET BY CREDIT RATING



Source: Barclays, Bloomberg, J.P. Morgan Asset Management; data as of September 2019.

been cyclical and will reverse over the next 15 years. However, much like in the U.S. corporate credit markets, we assume spreads per rating will be modestly higher than their historical averages. The duration extension motivates our higher spread assumption in the higher quality space, whereas the prevalence of relatively less liquid first-time issuers leads us to widen our spread assumptions in the high yield segment. Given starting valuations for interest rates and spreads, our projected return drops to 5.10%. Due to the structural index composition changes, we increase the expected loss due to downgrades and defaults to 75bps.

Local emerging market debt (EMD) return assumptions are unchanged from last year, with slightly lower but broadly similar starting yields and an expectation for an offsetting increase in translation gains as the U.S. dollar declines over the assumptions horizon. Given the 10% maximum limit on the exposure of a single country in the local EMD index, Chinese debt reached this upper limit shortly after it joined the local EMD index. This had a small adverse impact on the return assumptions, given the lower yields on Chinese debt compared with the current index average, but an above-average FX translation gain mitigated the impact on the expected return in USD.

This year’s EM corporate debt spread assumptions remain unchanged from last year. In recent years, the trend toward a lower average index credit quality has come to an end, while at the same time the duration profile of the index has remained well below its long-term average.

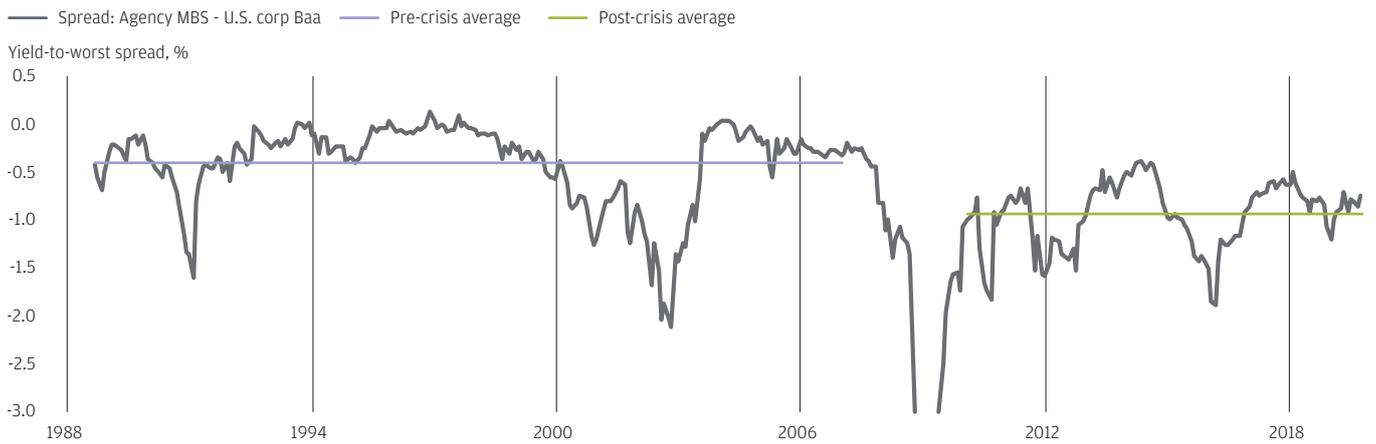
This year, we introduce explicit assumptions for the index of U.S. agency mortgage-backed securities (MBS). Historically, over long horizons agency MBS performance closely tracked

intermediate U.S. Treasuries, with periods of under-performance when sharply declining yields encouraged borrowers to refinance, as seen over the last year. Structurally, the last three decades' secular decline in yields has made such refinancing episodes occur more frequently than we expect will be the case going forward. This makes agency MBS returns relatively more certain. Higher valuations

reflect this fact, as well as the incremental demand from QE and investors hunting for yield. MBS spreads are tight relative to their historical averages and relative to corporate bonds (Exhibit 10). On balance, relative to similar-duration U.S. Treasuries we assume an additional long-term return of 60bps per annum, nearer to the upper end of the historical range.

This year, we introduce explicit assumptions for U.S. agency MBS

EXHIBIT 10: U.S. AGENCY MBS SPREADS RELATIVE TO CORPORATE BONDS, 1988-2019



Source: Barclays, Bloomberg, J.P. Morgan Asset Management; data as of September 2019.

ACCOUNTING FOR CHANGES IN INDEX CONSTITUENCIES

We accounted for two changes in index constituencies in 2019: The inclusion of Gulf Cooperation Council (GCC) countries' bonds in the J.P. Morgan EMBI Global Diversified Index (EMBIG D) and the introduction of Chinese government bonds (CGBs) in the Bloomberg Barclays Global Aggregate Bond Index (Global Agg).

The five GCC countries (United Arab Emirates, Bahrain, Kuwait, Qatar and Saudi Arabia) now constitute just under 13% of the overall index's market value. In tandem with Venezuela's exit from the index - it was the issuer with the highest yielding bonds - the inclusion of GCC country bonds structurally improved the index's quality over the year. The higher quality bias of the index - of which more than half is now investment grade - has lowered the outlook for spreads, returns (through carry) and volatility for the asset class.

With duration averaging around nine years, GCC country bonds have meaningfully longer duration than the index (about seven years). Cyclically, this higher duration has the effect of lowering returns for this year's assumption - the assumed normalization of Treasury rates in our process will impose a marginally larger drag on the performance of the EMBIG Diversified Index.

Turning to the other major change in the global debt index landscape, Chinese government bonds have a new profile after the J.P. Morgan Government Bond Index - Emerging Markets Global Diversified (GBI-EM GD) and the Bloomberg Barclays Global Aggregate Bond Index (Global Agg) decided to incorporate CGBs. FTSE Russell refrained from adding CGBs to its World Government Bond Index this year.

CGBs will be gradually incorporated into the GBI-EM GD through 2020 and are expected to reach the 10% country issuer limit. This has served to slightly lower our assumed overall yields in the relatively riskier EM index, but the adverse impact on projected returns is modest. CGBs will also represent roughly 6% of the Global Agg Index's market capitalization by the end of 2020. CGBs are putting modest upward pressure on the investment grade index's aggregate yields, but we don't anticipate any meaningful changes in the return outlook. The CNY is the only major currency in the Global Agg that causes USD investors to incur hedging losses. As a result, while the forecasted Global Agg yield has been pushed a little higher by the inclusion of CGBs, the impact on our hedged dollar return forecast isn't as positive.

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LV-JPM52180 | 11/19 | 0903c02a827249a0