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**Morgan Stanley Investment Management** 

#### Investing in a Post-Crisis Environment

June 2014

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The economic and policy cycle defines much of the beta for investments.

We seek to control the alpha by weighting a combination of risk exposures that optimizes the expression of our core view.

the following:

Real Yields

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#### 2014: An MVP Year for Bonds Determining relative value in government bonds will consist of *Manage* interest rate exposure ٠ The Path of Short Rates Make Value-oriented investment decisions ٠ The Pace of Rising Yields Invest in a manner consistent with the **Policy** response function ٠ The Shape of the Yield Curve

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#### Rising yields do not necessarily equal negative returns for bonds

Since 1977 there have been only 3 years when bonds posted negative annual returns. The first was in 1994 when the Fed hiked rates 300bps in a 12-month period, the second was in 1999 when the Fed hiked 175bps in an 11-month period to unwind the easing from the LTCM crisis. Third was 2013 when the Fed began tapering QE asset purchases.

Over the 35-years there have been periods when rates rose but bond returns were still positive. Clearly, the difference today is that yields are so low that the coupon from bonds offers little cushion against rising yields.

Also, since 1981 yields have been in a declining trend creating a secular bull market for bonds. If rates begin a new trend higher, then the pace of the rise will be the key determinant for bond returns.

# Path & Pace of Rates Matter for Bond Returns

Data as of December 31, 2013



#### End of calendar year returns and UST yield

Source: Bloomberg

The Barclays Capital Aggregate Bond Index is a market capitalization-weighted index. Most U.S. traded investment grade bonds are represented. Municipal bonds, and Treasury Inflation-Protected Securities are excluded, due to tax treatment issues. The index includes Treasury securities, Government agency bonds, Mortgage-backed bonds, Corporate bonds, and a small amount of foreign bonds traded in U.S. It is not possible to invest directly in an index. Past performance is not indicative of future results. Provided for illustrative purposes only.

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- Quantitative Easing
- Financial Conditions
- Forward Guidance
  - Calendar
  - Outcome
  - Optimal Control

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#### **Caught in the Middle**

Our thesis is that the performance of assets, when entering/exiting a crisis, will take the form of a cycle.

During the crisis, performance is highly correlated across assets and they broadly benefit from a policy response that lowers risk premiums in the later stage of the crisis.

At this late stage, assets then enter into a period of transition where correlations start to breakdown and valuations dominate performance with respect to the economic cycle. However, this transition does not happen all at once, it could take a few years.

Therefore, measuring the degree to which policy or the economic cycle will dominate asset performance is a critical element in our investment decision-making process.

Measuring this transition provides insight into portfolio weightings and asset selection. The

#### Driver of Returns: Risk Premiums vs. Valuations

#### Asset Performance is Caught Between Policy and Cyclical Dominance



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Most of the gauges on Janet Yellen's labor-market dashboard are still showing worse readings than before the credit crisis.

Only four indicators (NFP, shortterm unemp, layoffs rate and job openings rate) are back to precrisis levels

Participation rate, Long-term unemployment and PCE Core have been the biggest laggards

Higher Gross job flows (measures the rate of job churn) correspond to a healthier and more dynamic labor market. At present, gross job churn is around 8.6 million per month, lower than the 9.1M average seen in 2004-2007 period.

#### Key Changes (Feb to Mar)

- Gross Job flows decreased from 8.6M to 8.4M
- Job Openings rate and layoffs rate decreased from 2.9% to 2.8% and 1.2% to 1.1%, resp, still close to 04-07 averages.
- Quits & Hires Rate unchanged

   key measures for Yellen at
   3.4%, 1.8% resp. Below norms
   in last recovery indicating less
   dynamism in the labor mkt.

### Yellen's Labor Market Dashboard

	Worst Level	Prior	Current	2004-2007 Average	Worst	Pre-crisis Avg
Nonfarm Payrolls (6M Avg)	-745	194	203	165		•
Unemployment Rate (U3)	10.0%	6.7%	6.3%	5.0%		• • • • • • • • • • • • • • • • • • • •
Short-term Unemployment	6.8%	4.3%	4.1%	4.0%		•
Long-term Unemployment	4.4%	2.4%	2.2%	1.0%		• • • • • • • • • • • • • • • • • • • •
Part-time Employment	6.6%	5.1%	5.1%	3.1%		•
Marginally Attached Workers	1.8%	1.4%	1.4%	1.0%		• • • • • • • • • • • • • • • • • • • •
Participation Rate	62.8%	63.2%	62.8%	66.1%	•	
Layoffs/Discharges Rate	2.0%	1.2%	1.1%	1.4%		•
Job Openings Rate	1.6%	2.9%	2.8%	3.0%		• • • • • • • • • • • • • • • • • • • •
Quits Rate	1.3%	1.8%	1.8%	2.1%		• • • • • • • • • • • • • • • • • • • •
Hires Rate	2.8%	3.4%	3.4%	3.8%		• • • • • • • • • • • • • • • • • • • •
Gross Job Flows (Churn, MI)	6.3	8.6	8.4	9.1		• • • • • • • • • • • • • • • • • • • •
PCE Core	0.9%	1.1%	1.2%	2.1%		
PCE Headline	-1.2%	0.9%	1.1%	2.6%		•••••
CPICore	0.6%	1.7%	1.8%	2.2%		••••••
CPI Headline	-2.1%	1.5%	2.0%	3.0%		•••••

Notes

• indicates the current level, the closer it is to the right boundary the closer it is to the pre-crisis (04-07) average. "Worst level" is since 2008.

Unemployment Rate (U3): Total unemployed as a percent of the civilian labor force

Short-Term Unemployment: Share in the labor force of those unemployed for less than and equal to 26 weeks

Long-Term Unemployment: Share in the labor force of those unemployed for more than 26 weeks

Part-time Employment: Share in the employed labor force of those working part-time for economic reasons

Marginally Attached Workers: Discouraged workers that cited any reason for the lack of job search in the prior 4 weeks as a percentage of labor force plus all marginally attached workers.

Participation Rate: Ratio between the civilian labor force and civilian non-institutional population

Gross Job Flows: Sum of total job openings and total job separations which measures the rate of job churn

Source: Bloomberg LP. Updated May 26, 2014

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A Beveridge Curve, named after William Beveridge, plots relationship between the unemployment rates and job vacancy rates

Typically, higher rates of unemployment would be associated with lower levels of job vacancy rates.

The outward shift in the curve, unemployment not falling as fast as rising job vacancies suggest, implies high unemployment may be structural.

Yellen believes this argument is overstated and believes conditions are cyclical, thus unemployment will fall as the economy improves. It's not uncommon for job vacancies to rise faster than employment during periods of recovery.

However, she is concerned that structural unemployment risks may rise if the labour market improves too slowly, hence her desire to reduce the unemployment rate quickly.

# Unemployment: Cyclical vs. Structural





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**Shadow labor** is defined as the spread between the broadest unemployment rate (U6) that more fully captures underutilization of labor, and the narrowly defined, official unemployment rate (U3).

Shadow labor has improved from a cyclical low of 7.2 percentage points (pp) in 4Q 2009 to 6.0pp in 1Q 2014 – an improvement of 1.2pp. On the other hand, the unemployment rate has fallen by 3.2pp over that same period, implying that the unemployment rate appears to be overstating the improvement in the labor market.

As slack wanes, pressure in labor markets will reignite pay increases. Recently, wage and salary growth has been sluggish – scarcely breaking out of the sideways 1.5 to 1.7% range – and an extrapolation of our shadow labor measure implies that wage and salary growth may not break out of that channel until early 2015.

#### Measuring Labor Market Slack



Note: Using wage and salary data for civilian workers included in the Bureau of Labor Statistics' quarterly Employment Cost Index (ECI) report. Source: Morgan Stanley Research, Bloomberg LP. Updated May 6, 2014

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#### Fed to Create Stimulus by Lowering Real Yields

#### A Simple Plan

These charts represent output on the expected path of fed funds and inflation based on a scaled-down version of the FRB/US model.

Consistent with views previously expressed by Janet Yellen, lowering the unemployment rate quickly, as measured by reducing its threshold, may come at the expense rising inflation that overshoots the Fed's 2% target. (See the blue dashed line).

Effectively, the Fed may created stimulus by keeping nominal rates low while allowing inflation to rise. Thus stimulus is created by pushing real rates lower, which will reflate asset prices.



Source: The Federal Reserve's Framework for Monetary Policy – Recent Changes and New Questions; English, Salido, Tetlow. Presented at IMF Conference, Washington, DC, Nov. 7-8, 2013, MSIM.

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#### The market's not always right

The market as measured through fed funds futures does not do a good job at predicting Fed policy 15 months into the future.

#### Rate Tightening Cycle

The top chart on the right shows market expectations the last time Fed raised rates in 2004-06. The market was systematically behind the curve, thinking initially that the Fed would raise rates only a little (March 1, 2004), and then consistently expecting that rate hikes would stop well before they actually did.

#### **Rate Easing Cycle**

In the bottom chart, the market expected very modest rate cuts in late 2007 and early 2008. As of November 2008, the market expected rate hikes starting in December. These tightening expectations continued until the second half of 2011, when the Fed introduced forward guidance and said that it would not raise rates for another 2 years at least.

Bottom line: the market tends to underprice Fed moves.

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#### The Market is not good at predicting Fed Policy



Source: Cornerstone Macro Economics, Bloomberg. Data as of May 7, 2014

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Source: Thomson Reuters Datastream

Note: Real yields are the nominal yield of the asset less country specific CPI inflation. Dividend yields are viewed as real because inflation is already netted out. Source: Bloomberg, MSIM.

#### policy response function

Central banks are creating policies that keep nominal rates low while allowing inflation to rise. By definition, this pushes real rates lower and creates stimulus by reflating asset prices.

As a result, assets with positive real yields stand to benefit most from this form of policy support.

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Using a Taylor Rule framework , it signals that the Fed should have tightening bias while the ECB should have an easing bias.

The conflicting signals represent an opportunity to invest consistent with the policy reaction function. It indicates that Euro denominated bonds should be well supported by policy and outperform US bonds.

We incorporate this analysis into our valuation metrics and our investment decision process.

### Playing by the Rules

The Taylor rule indicates the Fed should hike while the ECB should cut



Note: The balanced-approach Taylor rule is defined as  $R_t = 2 + \pi_t + 0.5(\pi_t - 2) + Y_t$ . R is the policy rate,  $\pi$  is inflation, and  $Y_t$  is the output gap. Source: Federal Reserve Board of Governors, Bloomberg LP, Consensus Economics and MSIM calculations. Data as of May 27, 2014.

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This chart plots the historical path of US constant-maturity treasury (CMT) securities against the future average of the federal funds rate over various maturities. It makes the assumption that the FOMC raises the federal funds rate to 0.25% in December 2015 and raises the rate 25 basis points per meeting until reaching 4% in late 2017.

We can use this chart and related analysis for several analytical functions, including determining a "baseline" expectation for the path of longterm interest rates, examining how that path should change given changes in expectations for the path of short-term interest rates, and ascertaining when a particular maturity is trading at a significant term premium or discount relative to our own expectations for short-term rates.

#### The Path of Rising Rates

Comparing US treasury yields with the expected path of federal funds rate



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This chart plots the historical path of US constant-maturity treasury (CMT) securities against the future average of the federal funds rate for both a hawkish and a dovish scenario.

**The hawkish case** assumes the FOMC begins hiking interest rates by 25 bps per meeting in June 2015 until reaching 1% then subsequently hikes by 50 bp until reaching a terminal rate of 4%.

**The dovish case** assumes the FOMC begins with a hike to 25 bps in December 2015 and proceeds to hike by 10 bps per meeting until reaching a terminal rate of 3%.

The median FOMC projection from December 2013 indicated the federal funds rate is expected to reach 75 bp by the end of 2015, 175 bps by the end of 2016, and 400 bps in the long run.

## The Pace of Rising Rates

Comparing the Pace of UST Yield under both Hawkish and Dovish Scenarios



#### Notes

D= Dovish, H = Hawkish. Ex. 2YD is the path of the 2y rate under a dovish pace of rate hikes. 2YH is the path of 2y rates under a hawkish pace of rate hikes. Source: Bloomberg LP. Data as of May 27, 2014

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What should the Treasury curve look like if...

Measuring the sensitivity of Treasury yields to the long-term neutral fed funds rate

	2Y	5Y	10Y
Treasury yields	0.39%	1.56%	2.52%
4% terminal rate	0.21%	2.04%	3.02%
3% terminal rate	0.21%	1.68%	2.34%
2% terminal rate	0.21%	1.23%	1.62%

A topic of much recent debate has been the long-term neutral fed funds rate—the short rate which the Federal Reserve is expected to target assuming it has met its targets for inflation and employment. While historically this rate has been assumed to be 2% in real terms, due to various structural headwinds, some models now estimate it to be as low as -1%.

By extrapolating the path of short rates implied by various assumptions for the terminal rate, we can determine how sensitive the different points of the yield curve should be to the market's expected long-term neutral rate. From our model, which assumes the Fed begins hiking in December 2015 and that there is no term premium in the market, we can see that the market's current expectations are far closer to a 3% nominal terminal rate than to the 4% rate suggested by the FOMC.

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5y5y forward rates have repriced close to their long-term average, while 1y1y rates remain low by historical standards. This suggests that front-end rates are likely to follow the back end higher as the date of the Fed's hiking cycle moves closer in 2014.



Source: Bloomberg LP. Updated May 19, 2014

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### Exiting QE Increases Volatility and Yields

#### Valuing Changes in the Policy Response Function

The flow rate of Fed asset may be purchases may altered based on economic data going forward, this implies that easy policy is no longer a constant and volatility should therefore rise. Interest rates may rise but we think volatility may increase disproportionately.

Mathematically this means that spreads may widen on an option adjusted spread basis (OAS). OAS is a valuation measure for a bond above a benchmark curve such as the US Treasury curve or Libor.

OAS is calculated by factoring in many paths for the spot rate curve. The alteration of asset purchases from the Fed means that there will be more paths for interest rates to traverse, which will increase the variability of an asset price around its expected value and cause volatility to rise.





Note: This schematic of normal distributions with increasing variance is not drawn to economic scale and is for illustrative purposes only. It indicates that a reduction in asset purchases from the Fed will increase the variability of an asset price around its expected value. Source MSIM.

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The Fed's entry in to QE had the effect of lowering volatility and risk premiums. Fed 'tapering', a lessening of QE, is likely to cause volatility to increase.

Many carry trades were dependent on volatility remaining low. The potential for it to rise as the Fed 'tapers' has caused assets to reprice to higher yield levels as a result. This relationship is shown in the regression chart (black line).

However, communications at the June FOMC suggests a steeper equilibrium (green line) that maps the relationship between volatility and yields.

From this new trend line, we can measure a degree of overshoot/undershoot of 10y yields that helps us define its expensiveness & cheapness.

Updated as of May 26, 2013

### Yields Have Not Matched Fall in Volatility

#### Regression of UST 10y Yield vs. Volatility since Aug. 2011



Note: New equilibrium trend line incorporates the Aug 2011 start point and a long-term average of 3y10y swaption vol since 2008 crisis of 107.5bps and 2.90% UST 10y fair value from our model. Source: Bloomberg, MSIM

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#### Measuring the Policy Response Function Technical: The Market Pricing of ECB Policy MSIM EUR Financial Conditions Index (FCI) in Z-Score Units 6 Latest Value as of 23-May-2014: +0.03 Lehman 5 Aggressive policy talk by the ECB Cuts Rates ECB's Draghi for the 1 Tighter 175bps in 3 months establishment of bond purchase ECB Hikes 4 programs and the possibility of Rates 25bps expanding the ECB's balance sheet has lead to a reduction in ECB Initiates risk premiums and sharp easing 3 Bear **Covered Bond** US Debt Ceiling FCI Index Levels **Purchase Program** of financial conditions across the Coordinated CB Liquidity Greek Deficit Revised 3.7% to 12.7% Measures The easing in financial conditions has been driven in ECB Resumes Banking large part by the sharp decline in Bond Buying Concerns peripheral yields, tightening of spreads and increase in equity 0 ECB Offer Longer Term LTRO -1 Refi Operations Greek *↓ Easier* Downgrade EFSF/ESM 09/07 03/09 12/09 02/12 10/12 07/13 06/08 08/10 05/11 04/14

Eurozone.

markets.

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Our fair value model levels are derived from 1-year ahead consensus expectations from Blue Chip Economic Survey.

We use this model to distinguish between what the econometric valuation of UST 10y yields are vs. the actual market level. We plot a history of this residual in the lower chart.

We observe from this model that the 'fair-value' tends to be a transitory level. Rich/cheap tends to be regime dependent, implying that the market either trades rich or cheap to the fair value level for an extended period.

Currently, we think we are in a regime where the yields will trade 'cheap' to fair-value for an extended period as growth improves and LSAPs may be reduced.

As a result, we prefer establishing a short position around the fair-value level.

Data as of May 28, 2014

### Measuring 'Fair Value' on 10 Year US Treasuries

Using relationship between inflation/growth expectations, forward rates and inflation volatility



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This chart plots actual spreads and our estimated spread, decomposed by its key drivers.

The variables explaining our estimated spreads are growth differential to Germany, debt to GDP ratio differential and deficit to GDP ratio differential.

Portugal and Greece exhibit different spread dynamics during the crisis and we have captured this factor by including a dummy variable that takes value of 1 for these two countries.

This variable probably accounts for the fact that Portugal and Greece cannot access debt markets.

\*SPREAD = Sovereign Peripheral Regression Euro Area Dynamic model

### SPREAD: Modeling Euro Area Bond Spreads

We can identify the drivers of sovereign bond spreads by decomposing our long run estimate



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Our SPREAD\* model allows us to understand the drivers of 10-year Euro Area government bond spreads to German bunds. We use a panel error correction to model all Euro Area countries at the same time and disentangle short-term from long-term effects of macroeconomic variables on Euro Area spreads. By using SPREAD, we can identify misalignments of market pricing compared to our estimated long-term spreads based on macroeconomic fundamentals.

We find that Euro Area peripheral spreads still have scope to tighten, however, the recent rally makes Greece and Portugal relatively more expensive than other EA bonds when controlling for volatility.

\*SPREAD = Sovereign Peripheral Regression Euro Area Dynamic model

### SPREAD: Modeling Euro Area Sovereign Spreads

Employing debt/GDP ratios, deficit/GDP ratios and GDP growth

Country	Model spread (bps)	Actual spread (bps)	Divergence (bps)	Z-Score
Belgium	28	57	+29.3	+4.5
Spain	74	150	+76.0	+3.0
France	28	43	+15.0	+2.4
Greece	390	527	+136.7	+2.1
Ireland	94	126	+32.4	+2.0
Italy	141	157	+16.5	+0.7
Portugal	184	218	+34.4	+0.6
Finland	57	29	-27.7	-5.1
Austria	45	22	-23.3	-5.7
Netherlands	67	30	-36.5	-6.6

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