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EM Strategy

AMAFORE Investment Seminar – Portfolio Optimization and Allocation for 2011

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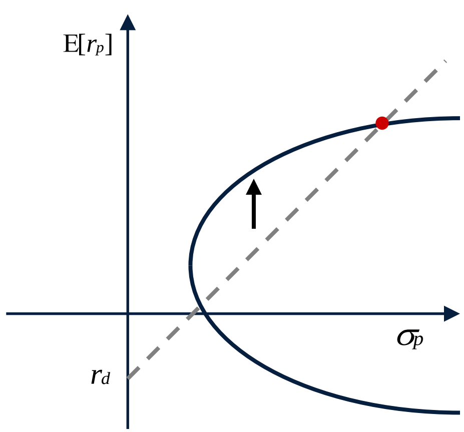
Optimizing the Afore portfolio: The procedure

Assumptions → **Data** → **Optimization** → **Reality check**

- **Assumptions**: Basic assumptions about key drivers including GDP growth, official rates, FX, etc.
- **Data**:
  - Compute historical returns for all investable assets
  - Compute expected returns for all investable assets***
- **Optimization**: Run optimization and select a portfolio from efficient frontier
- **Reality check**: Compare model results against investment objectives and current market conditions

Telser Safety First Criterion Optimization



Source: Morgan Stanley

$$\max \mathrm{E}[r_p] \quad \text{subject to} \quad p(r_p \le r_d) \le x\%$$

where

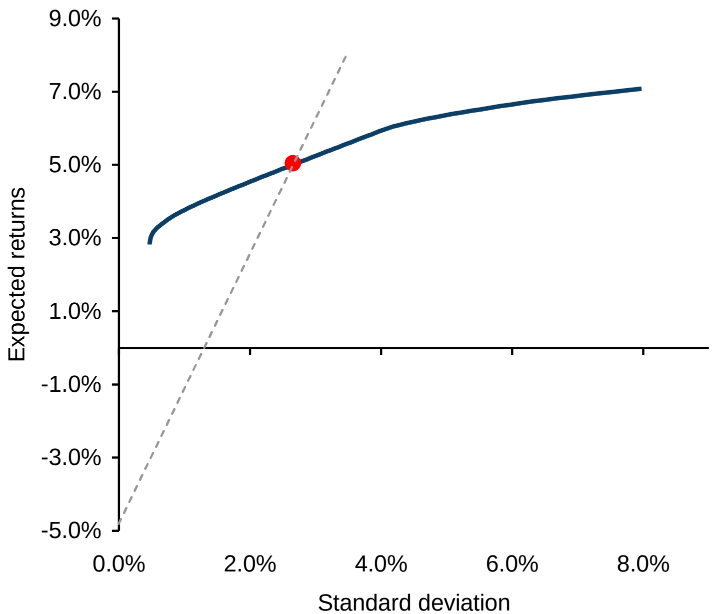
r_p = probability-weighted average return on portfolio

r_d = minimum return (disaster scenario)

x = probability of minimum return scenario being realized

The efficient frontier

Gauging the different portfolios in the efficient frontier



Source: Morgan Stanley

- We used Telser Safety First criterion in selecting this portfolio: maximize expected return subject to (Prob (portfolio return <= -5%) <= 0.01%)
- Using Telser criteria gave us broader diversification
- The Sharpe ratio of our portfolio is 1.88

Selected portfolio

Return	5.02%
Risk	2.67%
Sharpe	1.88
2y bonos	62.13%
2012 UDI	4.80%
Mexico MSCI	12.20%
Brazil MSCI	4.29%
UMS Benchmark	16.58%

Source: Morgan Stanley

- In general, the efficient frontier shows a series of portfolios with little compensation for taking on increased risk – mostly because there is a cap on the potential equity exposure
- As such, we saw no reason to select an overly aggressive portfolio in this first iteration
- Our portfolio is aggressively invested in bonds because equity vols are significantly higher than bonds (bonds continue to exhibit a better volatility-adjusted return profile)
- Ideally, we would repeat this process adjusting expected returns according to market conditions and specific views to obtain more robust results

Considerations and weights

Equity allocation

- In general, we think that Afores are currently underinvested in equities
- Our EM equities team is very China-focused, thinking that the country will continue to drive growth in coming years
- This means that we like to be exposed to this story via long commodities, long materials, long Hong Kong (China proxy) and long Brazil
- Mexico also comes out strongest in our optimization results
- Though we considered looking for some uncorrelated equity exposure as a hedge against this bullish China-centered scenario, we felt that the natural exposure to fixed income would balance out this risk

Equities
22%

12% Mexico

7% Brazil

3% Hong Kong

Structured Securities allocation

- Though we believe it makes sense to begin scaling into structured securities (slowly) as a means of accessing new markets, we had to exclude this category from our optimization framework, as modeling this exposure is very difficult
- For example, there are structured notes that could add exposure to different currencies, which given our view of the world would add an attractive dimension to the portfolio
- Though our preferred sector is infrastructure

Structured
2%

Considerations and weights

Bonos allocation

- The belly of the bono curve outperformed during the previous bout of QE in the US; we suspect this may be the case again, as investors tend to shy away from making monetary policy calls (short end) or extend duration (long end) in times of global uncertainty
- That said, our optimization results argue for investing in very short duration bonds which have positive expected returns with very low volatility
- The new increasingly liquid Dec 2015 is our preferred instrument in the belly of the curve
- We are less enthusiastic about longer-tenor bonds both because of our optimization results (effectively because these outperformed in 2010) and as we are concerned about the steepening (10s30s) in the US of late (whilst the Mexico curve has continued to flatten)
- But QE is likely to extend the current environment (at least through the beginning of 2011) characterized by low rates in DM and relatively higher rates in EM, which is leading to the massive inflows into the latter (and into longer end of local fixed income curves)
- We prefer the Nov 2038 simply due to slightly higher liquidity
- The Dec 2024 is trading very wide to TIIE (making it less attractive) because it is the most liquid bond on the curve

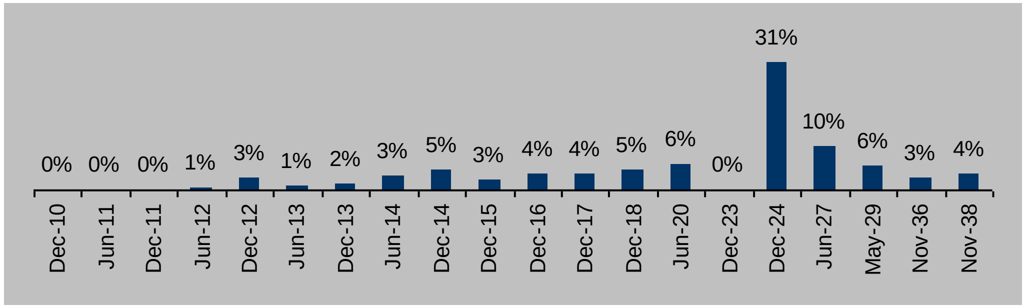
Bonos
24%

18% 1-5Y

4% 7-10Y

2% 20-30Y

Average trading volume of Bonos as % of total



Source: Banxico, Enlace, Morgan Stanley as of end-Aug 2010

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Considerations and weights

Udibonos allocation

- Though we are mindful of the need to hold Udibonos in the portfolio, falling nominal yields and falling inflation has made these assets somewhat rich at the moment
- Likewise, the recent increase in break-evens in the US (TIPS) may signal future moves in Mexico, though we are cognizant that the move in the US is largely due to the effect that QE is having in the market (re-pricing in of inflation)
- Indeed, in our discretionary portfolio we would look to pay break-even inflation in Mexico and our optimization results indicate investing in the bare minimum 4.8%
- But overriding these model-driven considerations we remain invested in this sector, as a hedge against a potential rise in inflation expectations sometime during the year
- We overweight the short-end of the curve given our model's results for higher expected higher returns in lower duration Udibonos

Udibonos
10%

6% 1-5Y

3% 7-10Y

1% 20-30Y

Corporate bond allocation

- Though we did not model the corporate sector in our optimization, due to the sheer number of issues (and limitations in using the index), we continue to see scope for material outperformance in the corporate sector
- Corporate debt has become an increasingly important (and traded) part of the EM fixed income world, especially as sovereign debt continues to trade at historically low yields and very low spreads

Corporates
15%

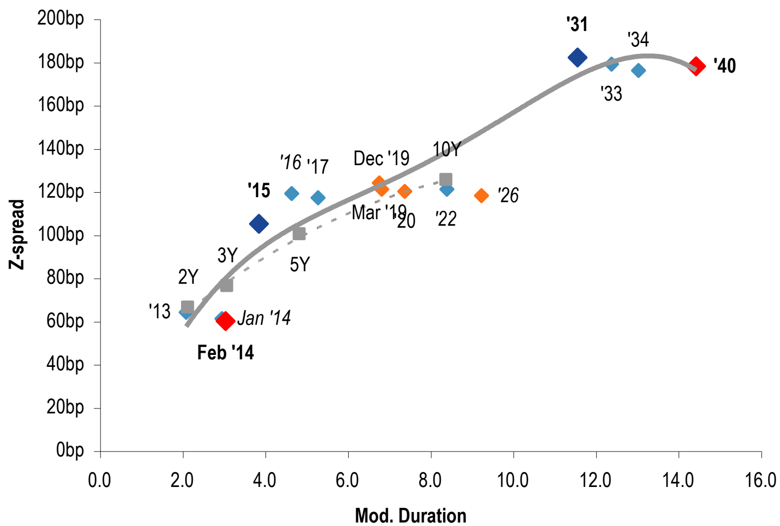
Considerations and weights

UMS allocation

- UMS is likely to remain attractive, in spite of rich absolute valuations, in a world where the search for yield continues to drive down spreads
- Though the credit has tightened materially, after a bout of underperformance in September (as the market priced in a less supportive growth outlook for the US, we see further scope for additional tightening versus peers such as Peru or Brazil (both of which have idiosyncratic events that are likely to put some pressure on spreads in coming months)
- But with absolute yields in the US at very low levels, and the subsequent risk being for higher rates going forward, we are generally cautious about adding too much exposure to sovereign credit, as it is our least favored asset class for the time being
- Most importantly, UMS tends to be negatively correlated to equities (and Udi's), thus making these assets a good hedge and portfolio diversifier

UMS
15%

UMS curve (rich/cheap)



Source: Morgan Stanley

Considerations and weights

Cash, Cetes and Floaters allocation

- Though we did not model cash or Cetes in our optimization, we believe that maintaining an average position in these instruments makes sense in the context of a world fraught with potential risks
- These risks include sovereign problems in Europe, potential for double-dip scenarios to return to the US and elsewhere in the developed world, regulatory risk, the risk of a global trade and/or currency dispute, increased violence in Mexico and potential political volatility ahead of the country's 2012 elections

Cash, Cetes
12%

Aggregate allocations

Equities	Structured	Bonos	Udibonos	Corporates	UMS	Cash, Cetes
22%	2%	24%	10%	15%	15%	12%
12% Mexico		18% 1-5Y	6% 1-5Y			
7% Brazil		4% 7-10Y	3% 7-10Y			
3% Hong Kong		2% 20-30Y	1% 20-30Y			

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Total	2,656		910		

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