Investment Essentials

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AXA Investment Managers - Research & Investment Strategy

Solvency II has and will make corporate bonds more expensive

by

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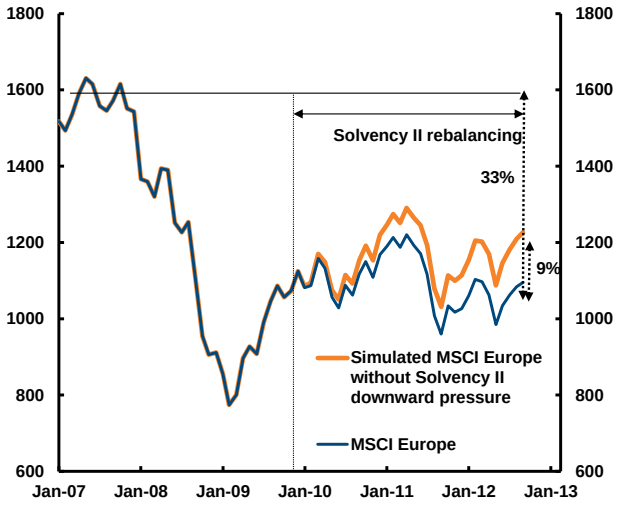
Key points

- Solvency II rules result in a significant reallocation of insurers' portfolios toward sovereigns and credit at the expense of equities.
- In this study, we assess the impact of the € 500 bn in asset flows generated by Solvency II on asset prices in European capital markets.
- Based on our estimates, this has already reduced investors' total return on European equities by up to one-fourth since 2009 and put a substantial squeeze on corporate spreads (of up to 80bps).
- Going forward, Solvency II will still be a significant driver of asset prices: it is likely to cost up to one quarter of the expected total return on equities and to bring down spreads another 60bps from current levels.
- Solvency II, combined with other factors (including low interest rates and Basel III), is contributing to a structural tilt in the market toward debt securities.

Exhibit 1

Solvency II reallocation has hampered equities

European equity market indices - Solvency II simulated impact



Source: Lipper, Bloomberg, Datastream & AXA IM Research

Research & Investment Strategy – *Mathieu L'HOIR & Mathilde SAUVE*

Executive summary

According to our forecast, very large asset flows of about € 500 bn come as a direct result of insurers shifting asset allocations in light of upcoming Solvency II regulations. This rebalancing process began at the end of 2009 and is likely to continue to unfold over the course of the next five years. The expected reallocation consequences of Solvency II are well known, encouraging insurers to reduce equity exposure and give preference to the less volatile short-term fixed income assets.

As our study shows, this reallocation has already had an impact – for instance, it may explain up to 25% of the current gap in equity prices with respect to pre-crisis price levels (*Exhibit 2*) – and will continue to impact European equity and fixed income markets in the coming years.

Exhibit 2

Solvency II has already impacted markets and should continue to do so…

	Equities (cumulative impact,%)	*Corporates (cumulative impact on spreads)*	Govies (cumulative impact on yields)
Estimated impact since 2009	-9%	-80bps	-10bps
Comment on estimated impact	25% of the current gap with pre-crisis price level	20%of total spread tightening since 2009 peak	Not significant
Expected Impact over the next 5 years	-10%	-60bps	-10bps
Comment on expected impact	It costs 25% of expected equity total return	Bring spread back toward 100bps	Not significant

Source: Lipper, Bloomberg, Datastream & AXA IM Research

Solvency II addresses over € 9 trillion

Insurers and pension funds account for 60% of European institutional assets, which comes to around € 12 tn out of € 20 tn[1]. Insurance companies account for the bulk of this total, with € 9 tn in assets. General Account assets make up two-thirds of this total, which means they are directly impacted by upcoming Solvency II regulations[2].

The Solvency II Directive – currently slated to go into effect on 1 January 2015, though it may not be implemented until 2016 – is a risk-based framework for the European insurance industry that includes a new set of capital requirements and valuation techniques with respect to investments. It definitely alters the way insurers make investment allocation decisions.

In a number of European countries, pension funds may also be subject to national adaptation requirements that are similar to those under Solvency II[3].

Setting the gears in motion

The Solvency II framework was developed partly in response to market turmoil and the global financial crisis that underscored weaknesses in the financial system and reawakened awareness of the need to modernise industry standards, in particular by putting both the capital charge and volatility of each asset class at the core of investment allocation decisions.

We have already witnessed portfolio rebalancing on the part of investors subject to Solvency II ahead of the anticipated go-live date. This rebalancing began in 2009 and will likely continue to unfold over the next five years. Here we examine how the regulation alters investment allocation decisions, investor progress toward implementation, and the impacts of Solvency II on European markets, now and in the future.

A new framework for investment decisions

Solvency II regulatory requirements introduce a new risk/reward profile for assets that favours govies and short duration investment grade corporate bonds

Solvency II capital requirements redefine an insurer's optimal investment portfolio. From a purely economic perspective, financial theory states that all asset classes should provide similar risk-adjusted returns, i.e., investors are compensated per unit of risk assumed. In this way, one would expect to see excess return (over the swap rate) rise in line

[1] IMF, Global Financial Stability Report, Chapt. 2, Sept. 2011

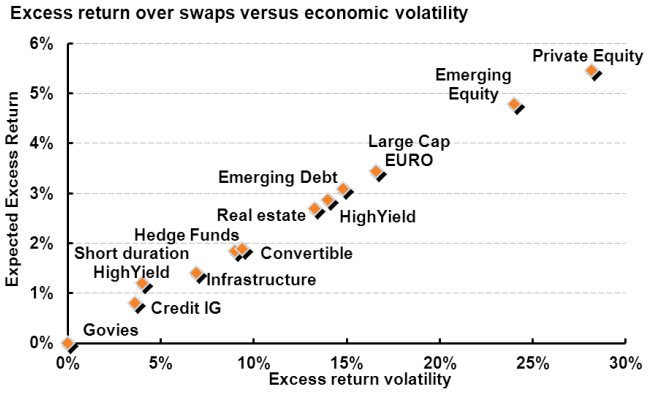
[2] Remaining € 3 tn for unit-linked business less directly impacted by Solvency II (source: Insurance Europe statistics at YE 2010)

[3] Namely, local adaptations in the Netherlands (FTK) and the Nordic countries

with risk (e.g., volatility) for a given asset class. Plotting various asset classes shows a near linear relationship between risk and expected return over the long run, as shown in *Exhibit 3*.

Exhibit 3

Forecast economic risk/return profile

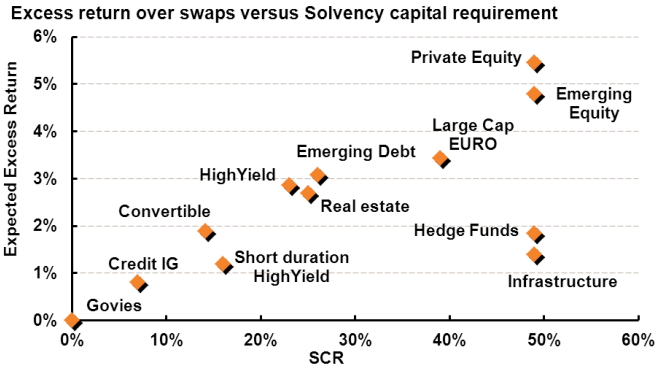


Economic assumptions have been calibrated using unsmoothed historical data from benchmarks (any liquidity bias has been removed).
Source: AXA IM

Solvency II regulatory requirements distort this relationship by introducing solvency capital requirements (SCR) by asset class. As illustrated in *Exhibit 4*, the linear continuum for the SCR-adjusted return has weakened. This explains why Solvency II could incentivize different investment choices.

Exhibit 4

Forecast statutory risk/return profile under Solvency II



SCR (Solvency Capital Requirements) have been computed for AXA IM funds (as of the second quarter of 2012), We assume that currency risk has been hedged and apply QIS5 Std Formula.
Source: AXA IM

Implications for asset allocation

Under Solvency II, the challenge for insurers is to select an asset allocation that takes into account asset class volatility and optimises SCR consumption. In practice, several implications for asset allocation emerge:

- **Greater appetite for sovereign debt**, as it is not (SCR) charged. This tendency is further boosted by local rules and regulations that encourage the uptake of domestic sovereign debt[4].
- **Investment Grade Credit becomes the defensive asset of choice** because of its lower volatility and acceptable SCR level.
- **Short duration credit is favoured over long duration credit**, leading to spread curve steepening in the corporate bond market.
- **Lower appetite for naked equities.**
- **Greater push for diversification** in order to reduce capital requirements and lower economic volatility.
- **Greater use of derivatives** to dynamically manage risk (Interest Rate, Equity).
- **Pressure to shift the hedging strategy on long-dated liabilities away from the long end of the interest rate curve** in light of the Ultimate Forward Rate (a fixed long-term rate for discounting liabilities).

Shifting the € 6 tn asset allocation

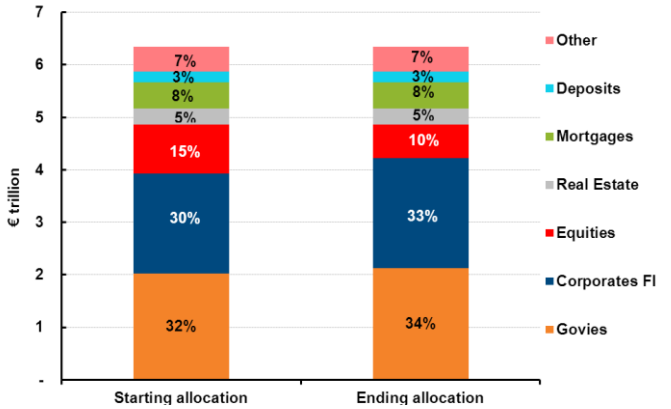
Solvency II has already resulted (and should continue to result) in a significant insurers' portfolios reallocation toward sovereigns and credit at the expense of equities.

Our proprietary optimisation tool allows us to characterize the efficient frontier for a level of volatility under an SCR constraint through simulations on the full asset allocation universe. In a scarce capital environment where insurers do not want to increase their risk/SCR budget, we consider that all insurers tend to adopt similar behaviour in terms of asset reallocation (*Exhibit 5*):

- Reduce equity from 15% to 10%
- Raise sovereigns from 32% to 34%
- Raise credit from 30% to 33%

[4] As an example, the decreto Salva Crisi in Italy promoting BTPs

Exhibit 5
European insurer asset allocation pre- & post-Solvency II (€ 6 tn invested[5])



Source QIS5 EIOPA report, 2009 Insurance Europe statistics, AXA IM simulation tool

The Solvency II asset class rebalancing process began at the end of 2009 and, in our view, will continue to unfold over the course of the next five years, i.e., after Solvency II is implemented (implementation is currently slated for 1 January 2015 or most likely in 2016). Thus the total rebalancing period spans eight years[6].

This trend is confirmed in official figures published by insurers at half-year 2012 (*Exhibit 6*).

For big players (representing 30% of the total European assets of insurers), since YE 2009 the top 10 listed insurance players in Europe have reduced their equity exposure while increasing their credit exposure.

For medium and small players (representing 70% of the European assets of insurers), the publicly available figures are not as recent (through year-end 2010). The reallocation process has probably just started, with an estimated reduction in equity exposure to date from 18% to 15%.

Considering that the reallocation process is finished for the big players and has only just begun for the medium and small players, we estimate that half of the reallocation has already been implemented by insurers at half-year 2012. For example, on equities, the current allocation is 12%, down from 15% at end-2009, versus a 10% target (*Exhibit 6*).

Exhibit 6
Illustrating the reallocation process for European players

Asset mix	Equities	Govies	Corpo
Big players – YE 2099 allocation	9%	38%	40%
Big players – HY 2012 allocation	6%	39%	42%
Big players - comments	Reallocation is over for the big players – that represent 30% of the European Assets of Insurers		
Small/medium players – YE 2009	18%	30%	26%
Small/medium players – est. HY 2012 allocation	15%	32%	28%
Small/medium players – comments	Reallocation has just started for the small/medium players – that represent 70% of the European Assets of Insurers		
Recap all players – YE 2009 allocation	15%	32%	30%
Recap all players – est. HY 2012 allocation	12%	33%	32%
Recap all players – targeted ending allocation	10%	34%	33%

Source: Half-year and annual reports for listed companies & AXA IM Research

Solvency II has already impacted equities and corporate bonds…

Solvency II has contributed to low European equity price levels and has put cumulative downward pressure of 80bps on corporate bond spreads since 2009. Its impact on govies has been insignificant.

According to our estimates of portfolio rebalancing (*Exhibit 5*) and the current total outstanding amounts on markets, the flows generated over the whole period represent approximately 3% of European equity market capitalisation, 1% of EU government bond market value, and an impressive 6% of the full market value of Euro Area corporate bonds.

The extensive scale of these flows suggests that they have probably already had a significant impact on asset prices over the last three years. To assess this impact, we use three pieces of information:

i. As we pointed out above, around 50% of insurance companies portfolio rebalancing has already been achieved, **which**

[5] Starting allocation built on the year-end 2009 figures from the QIS5 EIOPA report (March 2011) and Insurance Europe statistics at year-end 2009. Target allocation assessed with AXA IM simulation tool.
[6] We assume that 75% of the rebalancing will be tilted toward European assets.

represents about 1.5% of the European equity market cap;

ii. **Our fund flows model**: this model estimates the contemporaneous relationship between monthly fund flows and stock market return, corporate bond spread variation and government bond yield variation. Fund flows data used to estimate the model are from Lipper. (See appendix for a detailed description of the AXA IM Fund Flows model);

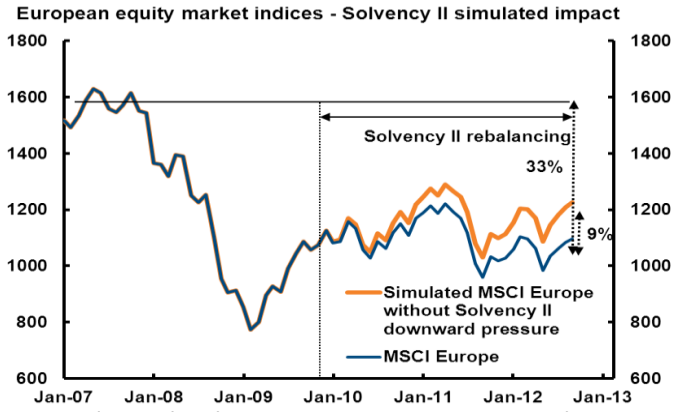
iii. If we apply the coefficients of our fund flows model (sensitivity of prices to inflows or outflows) to the equity outflows generated by Solvency II and described in step (i) (i.e., 1.5% of the European equity market cap), we come to the conclusion that **Solvency II related rebalancing may have generated downward pressure of up to 9% on European equities since end 2009**.

Equities have been significantly impacted since end-2009…

European equity prices are still 33% below their pre-crisis level; therefore, **our results suggest that up to 25% of the gap between current equity prices and their pre-crisis level could be explained by the sizeable outflows induced by Solvency II reallocation (*Exhibit 7*).**

Exhibit 7

Solvency II reallocation has put equity prices under pressure



Source: Lipper, Bloomberg, Datastream & AXA IM Research

The remainder of the gap is attributable to depressed corporate earnings growth and high risk premium. Earnings still have some way to go before returning to their 2007 levels. Incidentally, we expect earnings growth to stay close to 0 for 2013.

… as well as corporate bonds…

As far as corporate bonds are concerned, **our computations reveal that the huge Solvency II driven inflows to the EMU credit market may have exerted significant downward pressure on spreads (up to 80bps since 2009, on a total spread tightening of almost 300bps).** This is hardly surprising given that additional demand for liquid corporate bonds from European insurance companies over the last three years represents a significant percentage of the available bond supply on the market (3% of Euro Area corporate bonds at full market value). However, this effect has been diluted due to the large impact of the risk-on/risk off swings.

… but not government bonds

With regards to EU government bonds, the estimated impact of rebalancing inflows is negligible, representing less than 10bps since 2009, a period during which European bond yields dropped by 120bps. The impact of fund flows is therefore completely neutralized by both financial repression—as governments still need investors to buy the enormous new supply of debt at low cost—and investor flight to safety.

Impact should continue to be felt over the next five years

Solvency II could still cost 2% in annualised return for equities (i.e., up to 25% of the expected annualised total return) and lead to another 60bp in cumulative tightening of spreads over the next five years.

The rebalancing process is far from over and the amounts involved are significant. Below, we present the effect of Solvency II over the next five years, in addition to the more structural and traditional factors driving assets returns.

Equities will continue to bear the brunt …

On the equity side, our results suggest that Solvency II is still expected to take about 2% off total equity return.

A conservative estimate for **total return on European equities** – assuming stable valuation

multiples, 5% average year-on-year earnings growth, and a 3% dividend yield – would be 8% on an annualised basis.

These reasonably conservative assumptions produce a result that compares with the 10% annualized total return over the last 30 years for the MSCI World and the S&P500.

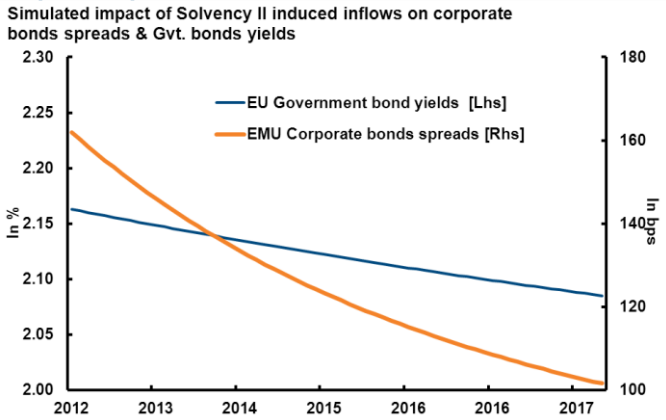
Subtracting the 2% annualized expected impact of Solvency II portfolio rebalancing, **we end up with a 6% annualised total return on European equities over the next five years.** While this is clearly a drag on equities, it is not a game changer.

… while corporate bonds will still be supported…

Concerning corporate bonds, **Solvency II could potentially bring down spreads another 60bps from current levels** (*Exhibit 8*).

Exhibit 8

Solvency II rebalancing should continue to compress corporate spreads …



Source: Lipper, Bloomberg, Datastream & AXA IM Research

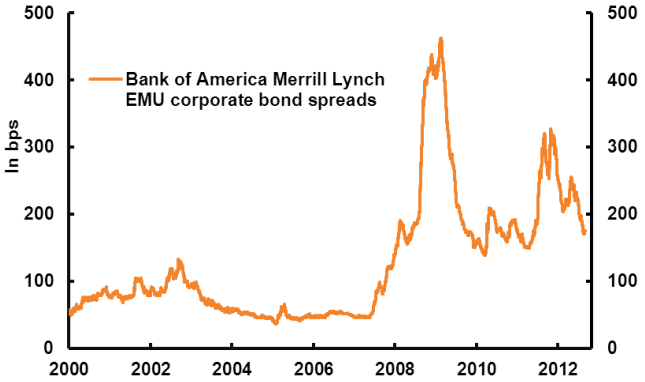
All things being equal, investment grade spreads could drop from 160bps today to 100bps by the end of 2017, which is still significantly above the level observed during the 2004-2006 period, with spreads hovering around 50bps at this time (*Exhibit 9*).

However, the capacity of the market to absorb regulatory driven shocks is a direct function of the market's depth and liquidity. Said differently, **the final impact of Solvency II rebalancing on spreads is highly dependent on whether the ECB is successful in dealing with the fragmentation of the European credit market.**

In this respect, the ECB's Outright Monetary Transactions mechanism (OMT), which has been explicitly designed to restore the transmission of monetary policy, should lead to a convergence of credit conditions and help peripheral corporates continue to issue on the market. This in turn should improve the overall liquidity of the European credit market and prevent the corporate spreads of core countries from collapsing.

Exhibit 9

… though they will remain well above their mid-2000 levels



Source: Merrill Lynch, Bloomberg & AXA IM Research

This is our baseline scenario and recent signs from the market indicate that things are heading in this direction: non-financial corporates issued some € 37 bn in September, which was the second best month ever for European credit markets.

… but the impact on govies should be subdued

Solvency II is unlikely to make a strong difference for government bonds (*Exhibit 6*), as the total expected impact is weak compared to more structural factors like ongoing financial repression, the swing in the systemic risk premium, the scarcity of truly risk free assets and the change in inflation expectations – to name but a few. In our view, bond yields should very gradually converge toward more normal levels as they mean revert to their long term fair value[7].

[7] However, extremely expansionary monetary policies and weak growth should limit the speed of convergence of US Treasuries and Bund yields toward fair values. See our April 2012 Spotlight "Higher US Treasury yields: neither fast nor furious".

Impacts on market structure witnessing tectonic shift

Solvency II is one of several other powerful factors (low interest rates, negative feedback loop between sovereigns and banks, Basel III) changing the market structure.

Could this fall in spreads and the expected relative weakness of equities induced by Solvency II lead to a US-style disintermediation and further de-equitization?

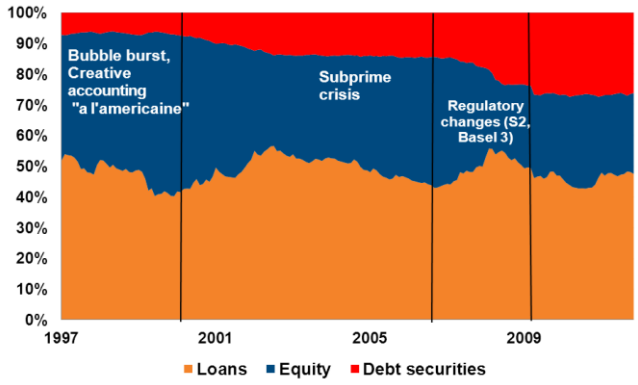
The de-equitization movement is already a reality (*Exhibit 10*), due in particular to the following factors:

- The very low interest rate (ECB deposit rates are close to zero), which is a clear incentive for companies in a debt versus equity arbitrage to use their excess cash and cheap debt for share buybacks;
- The high degree of uncertainty regarding the global economic and market backdrop that has accompanied subdued IPO levels.

Exhibit 10

De-equitization is already a reality; bank disintermediation is not

Euro Area: shares of different forms of financing of the non financial corporate sector (% of total outstanding amounts)



Source: ECB, AXA IM Research

However, **we don't think this movement can go much beyond that, given the already very low level of equity financing, which now represents only one-fourth of private sector financing**.

With regard to bank disintermediation, the share of bank credit in the total financing of the Euro Area's private sector has been fairly stable over the last 15 years (around 50%). At the same time, the current crisis has already increased the amount of deleveraging, which curbs the supply of bank credit. Without the creation of a banking union, the mounting pressure on banks could result in a significant reduction in the Euro Area's credit supply, e.g., of almost 18% in peripheral countries according to the IMF's latest Global Financial Stability Report.

In addition to the strong impact of Euro Area policy action (or failure to act) on bank deleveraging, Basel III's new capital requirement makes bank lending more constrained as a general rule. In this context and to broaden the debate, we think that **Solvency II, combined with other factors (including low interest rates and Basel III), is contributing to a structural tilt in the market toward debt securities**.

Appendix: AXA IM fund flows model

We assess the impact of Solvency II on asset prices through our fund flows model, which estimates the sensitivity of stock market returns, corporate bond spreads and government bond yields to fund flows. Fund flows data are from Lipper. On the equity side, we consider all fund flows on European large caps. Price returns and market capitalisation are computed on the MSCI Europe universe. For sovereign bonds, we select fund flows on securities issued by European Union member countries. Yields and full market value are those of the BofA Merrill Lynch European Union Government Bond Index. Corporate-wise, we opt for the BofA Merrill Lynch Euro Corporate Index – which offers better historical depth than pan-European corporate indices – and work with the corresponding fund flows on EMU corporates bonds.

A € 100 mn demand shock in the early part of the sample period is not equivalent to a € 100 mn demand shock in the later part of the period, as total capitalization of the market grows over the interval of study. This is why flows are normalized by the trailing moving average of market capitalization or full market value for bonds.

Our fund flows model estimates the monthly contemporaneous[8] relationship between monthly fund flows F_{it} and stock market return, corporate bonds spread variation (in percentage, i.e. $S_t / S_{t-1} - 1$ where S_t stands for the corporate spread at date *t*) and government bonds yield variation (idem) that we note $R_{it,t-1}$, where i stands for the asset class. In order to control for global market movements that have not been caused by fund flows, we introduce control variables correlated with asset prices. We include the 1-month Euro Stoxx 50 volatility index variation ($\Delta VStoxx_{t,t-1}$) as a proxy for the risk premium fluctuation on European markets and the 1-month variation of the US ISM index ($\Delta ISM_{t,t-1}$) to take into account for global cyclical effects on asset prices. Specifically, the estimated system of equations is:

$$R_{Et,t-1} = \alpha_E + \beta_E F_{Et} + \gamma_E \Delta VStoxx_{t,t-1} + \phi_E \Delta ISM_{t,t-1} + \varepsilon_{Et}$$
$$R_{Ct,t-1} = \alpha_C + \beta_C F_{Ct} + \gamma_C \Delta VStoxx_{t,t-1} + \phi_C \Delta ISM_{t,t-1} + \varepsilon_{Ct}$$
$$R_{Bt,t-1} = \alpha_B + \beta_B F_{Bt} + \gamma_B \Delta VStoxx_{t,t-1} + \phi_B \Delta ISM_{t,t-1} + \varepsilon_{Bt}$$

Where *E* stands for equities, *C* for corporate bonds and *B* for government bonds The model is estimated based on monthly data from December 2001 to end of May 2012. To account for heteroskedasticity and contemporaneous correlation in the errors across equations, we estimate the parameters of the system using the seemingly unrelated regression (SUR) method.

The regressions results are reported in *Exhibit 11*. All fund flows coefficients have the expected sign, i.e. positive for equities - inflows push stock prices up – and negative on bonds – inflows decrease bond yields and spreads.

Exhibit 11
AXA IM fund flows model coefficients

	Equities	Corporates	Govies
Constant	-0.0005	0.0002	-0.005
Fund Flows t-stat	0.087 (2.04)**	-0.25 (-6.47)***	-0.10 (-1.89)*
VStoxx t-stat	-0.006 (-13.4)***	0.009 (6.79)***	-0.002 (-2.77)***
ISM t-stat	0.003 (2.33)**	-0.01 (-2.60)***	0.005 (1.81)*
R^2	64%	55%	10%

**** Significant at the 1% level*
*** Significant at the 5% level*
** Significant at the 10% level*

Source: Lipper, Bloomberg, Datastream & AXA IM Research

[8] The effect of fund flows on prices may be interpreted in two ways. Either investors' supply and demand affects market prices, or investors condition their demand and supply on market fluctuations. We view the Efficient Market Hypothesis, even in its weakest form, as strongly supportive of the former, i.e., of a contemporaneous effect of fund flows on prices, while it may be fair to suppose that mutual fund flows react more slowly, i.e., with a lag, to market fluctuations.

Our research on the internet

All our research is available on our website: http://www.axa-im.com/en/research

Our last two publications:

Mind the (financing) gap

The rays of hope we were starting to see in our last Strategy publication have begun to materialise, however, concerns regarding US politics and Greek solvency prevent a more constructive stance on risk assets. Against this backdrop we remain positive on credit and neutral on equities and government bonds.

High yield: the party continues – at least for now!

The US and European high yield markets have enjoyed exceptional returns in 2012. While we maintain a positive outlook for the sector, continued investment requires an understanding of the elements which continue to drive and distort it, combined with an appreciation that all good things come to an end.