BLACKROCK®

BLACKROCK INSTITUTIONAL TRAINING
Advanced Fixed Income

NEW YORK • 8 – 12 SEPTEMBER 2014

BlackRock Solutions Overview and Demo

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BlackRock Solutions Overview

BlackRock Solutions ("BRS") overview

Uniquely positioned to address the risk management needs of institutional investors

- Combination of proprietary risk analytics and investment systems with capital markets expertise

Three primary lines of business:

- **Aladdin®**– highly scalable investment management platform including portfolio analysis and risk management tools; used in support over 175 clients
- **Client Solutions** – provides customized multi-asset advice for institutional investors on portfolio construction and risk management strategies
- **Financial Markets Advisory** – solves complex problems for holders of financial assets through unbiased financial markets advice and integrated project execution

1

Aladdin

Risk analytics platform

Risk platform + end to end investment system

Investment accounting

Operations outsourcing

2

Client Solutions

Strategic and tactical asset allocation

Risk budgeting and portfolio optimization

Thought leadership and client education

3

Financial Markets Advisory

Valuation and risk assessment

Financial / balance sheet strategy

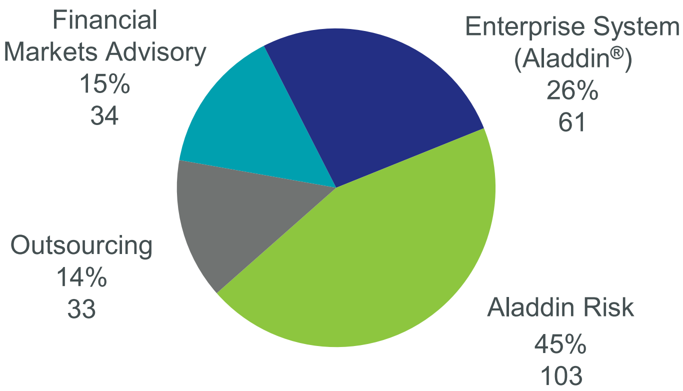
Bespoke financial modeling & analytics

Disposition of distressed assets

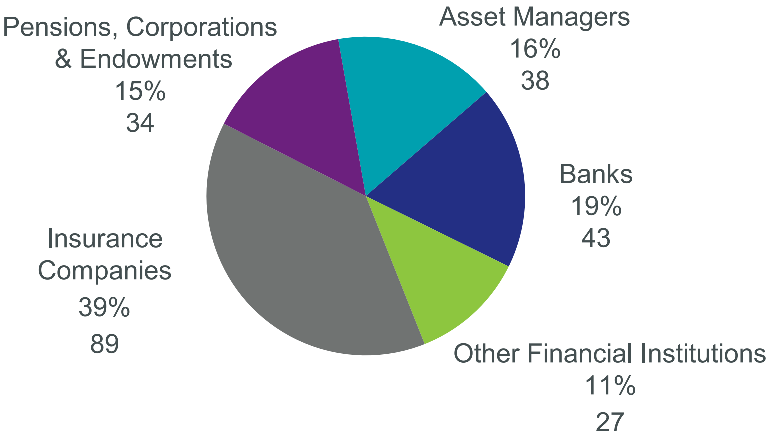
Tailored solutions to meet unique client requirements

Representative assignments

Ongoing Assignments By Service



Ongoing Assignments By Client



Representative Ongoing Assignments

Asset Managers	Banks & Financial Institutions	Insurance Companies	Pensions & Corporations
AMP Capital Investors	Ally Bank	AEGON	AT&T
BlackRock	FHLB-Atlanta	Aetna	CalPERS
Charles Schwab & Co.	Freddie Mac	AFLAC	CalSTRS
Colonial First State Asset Management	JPMorgan	Allstate	Google
Columbia Management	Mizuho Bank	Arch Capital	GuideStone Financial Resources
Commonfund	Nomura Holdings America	Aviva Investors	HSBC UK Pension
Deutsche Asset & Wealth Management	OneWest Bank	Brit Insurance	Orange County Employees Retirement System
DIAM	PNC Financial Services	ING Investment Management	Pennsylvania Public School Employees' Retirement System
Guggenheim Capital	Regions Financial Corporation	Liberty Mutual	Pension Fund Assoc.
Mizuho Financial Group	GIC Private Ltd.	Munich Re	UK Coal Pension
Morgan Stanley Investment Management	Sumitomo Mitsui Trust Bank	NLI International, Inc.	VicSuper
Pioneer Investment Management, Ltd.	UBS AG	NY Life Investment Management	Virginia Retirement System
SEI Investments	Union Bank	Prudential Investment Mgmt	
Sumitomo Mitsui Asset Management	Walter Investments	Swiss Re	

Represents ongoing assignments as of 30 June 2014. List is a representative sampling of clients based upon mandate, client type, and geographic location who allow their names to be publicly disclosed as of 30 June 2014. Disclosure does not indicate approval or disapproval by such client of BlackRock Solutions or of the services provided.

Aladdin risk and investment platform

Aladdin connects the information, people and technology needed to manage money in real time

ALADDIN PLATFORM

- Combines sophisticated risk, exposure and performance analyses with comprehensive portfolio management, trading, compliance and operations tools on a single platform
- Provides transparency and powers informed decision-making, effective risk management, efficient trading and operational scale

ALADDIN RISK

- Aladdin's risk, exposure and performance analysis capabilities are also available on a standalone basis
- Provides transparent, timely, and dynamic understanding of risks and returns across all asset classes

OUTSOURCING LEVERAGING ALADDIN

- BlackRock leverages Aladdin to offer customized middle office outsourcing and investment accounting services

Aladdin Risk Overview

Aladdin Risk overview

Combines sophisticated risk analytics, highly scalable processing capabilities, and subject matter expertise…

Industry leading models and analytics	Production of analyses	Data management and comprehensive quality control	High levels of client service

…to help investors understand risks and returns across five key areas…

Portfolio Positioning & Exposures	Performance & Attribution	Portfolio Risk & Scenario Analysis	Asset Allocation Analysis	Compliance & Oversight

…using a variety of flexible reporting and analysis options

- Highly flexible user-configurable reports
- Custom breakdowns, graphing, and trend analysis
- Interactive what if analysis

Sophisticated analytics + scalable processing + subject matter expertise

Industry leading models & analytics

- Models cover EQ, FI, FX, derivatives, commodities and alternatives
- Support for complex structures, including fund of funds, custom benchmarks, multiple roll-ups, etc.
- Same analytics used by BlackRock
- Incorporates views of market practitioners

Production of analyses

- Manage highly scalable technical infrastructure
- Receive positions from the client
- Model all securities and calculate risk analytics and cash flows
- Aggregate results up to the enterprise level by security type, sector, portfolio, etc.

Data management and comprehensive quality control

- Maintain security data, economy data, and benchmarks on behalf of clients
- Perform extensive quality control at all stages of the process
- Allows clients to focus on markets and risk positioning (not data)

High levels of client service

- Dedicated analytics support team to meet custom client requirements
- Continual access to new modeling, analytics and reporting enhancements

CLIENT, CUSTODIAN, ACCOUNTING AGENT AND/OR MANAGERS

Position Information →

Terms & Conditions for Certain Instruments

ALADDIN

Models Securities

Calculates Risk

Creates Analyses
Compares to Compliance Guidelines

QUALITY CONTROL

← Client Website

CLIENT

Monitors and Manages Exposures and Risk

Understand risks and returns across five key areas

Aladdin Risk allows risk and investment professionals to answer key questions about portfolio risk and performance, resulting in more informed investment decisions

Portfolio Positioning & Exposures	▸ What are my sector and issuer concentrations? ▸ What is the duration of my FI portfolio? What is my exposure to various points on the curve? ▸ How have exposures changed over time as the market has moved?
Performance & Attribution	▸ How is the portfolio performing on an absolute basis and relative to the benchmark? ▸ Which portfolio management decisions are contributing to over/under-performance?
Portfolio Risk & Scenario Analysis	▸ Which risk factor exposures are contributing to the risk of my portfolio? ▸ How would my portfolio perform under various economic scenarios, including historical-based and hypothetical stress scenarios?
Asset Allocation Analysis	▸ How should I allocate assets to optimize returns at the desired risk levels? ▸ What impact would changing the benchmark have on portfolio target risk and returns?
Compliance & Oversight	▸ How is the portfolio positioned relative to risk budget and other compliance guidelines? ▸ Are managers keeping in line with compliance limits?

Meets the needs of risk managers, portfolio managers, compliance officers, executives and boards

Flexible reporting and analysis options

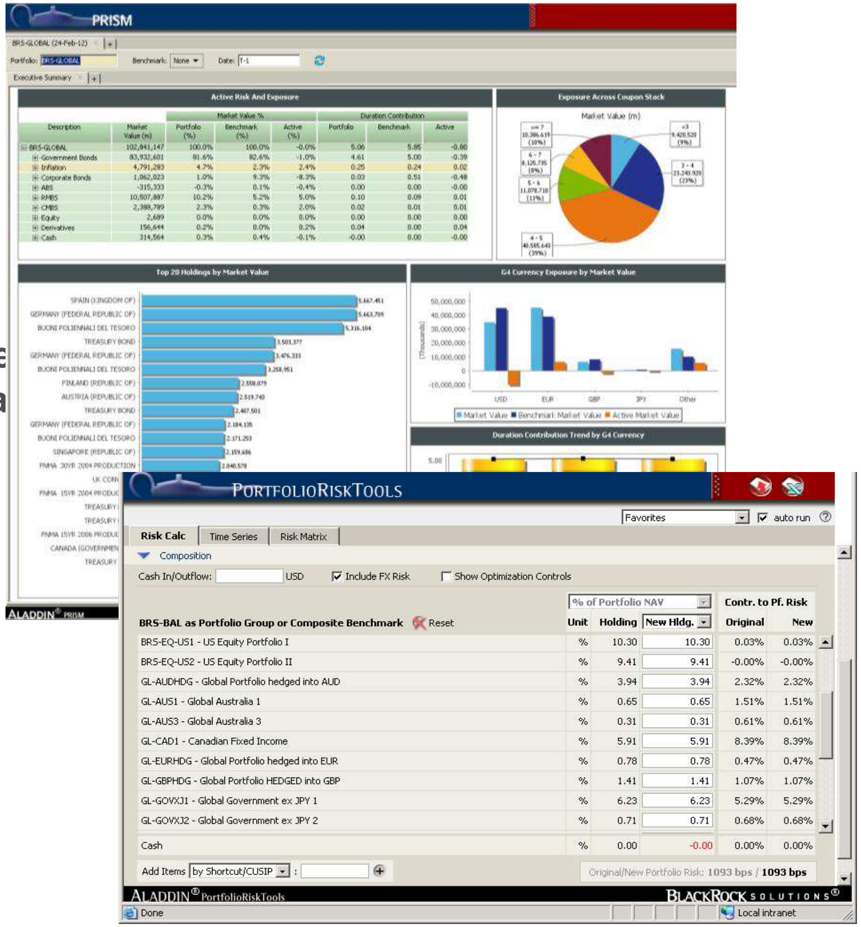
Highly flexible user-configurable reports including custom breakdowns, graphing, and trend analysis

- Consolidate exposure, portfolio risk, and performance and attribution analyses
- Ability to answer various questions through data mining
- Used to facilitate management, board and client reporting

Interactive what-if analysis, including ability to create custom shocks, define analysis assumptions and dia models

- Estimate parametric P&L for pre-canned or custom stress scenarios as well as historical date ranges
- Conduct 'What if' analyses to measure the impact of new trade ideas on portfolio risk
- Perform risk optimization
- Evaluate the specific factors driving the risk model

Quality-controlled suite of holdings-based reports serve as basis for interactive capabilities



Meets the needs of risk managers, portfolio managers, compliance officers and executives and boards

Case studies

Clients use Aladdin Risk in a variety of ways to meet specific business needs

Pension

Total plan risk

Provide client with monthly reporting across all internally and externally managed equity, fixed income and alternative assets to support risk management and oversight

Asset Manager

Support portfolio manager investment decisions

Daily risk and performance attribution reporting along with what if analysis tools allow portfolio managers to effectively manage large fixed income portfolio

Insurer

Risk reporting coupled with investment accounting

Full outsourced support for daily risk reporting and investment accounting across multiple external managers for reinsurance company

Pension

Total plan risk coupled with consulting

Monthly overall risk reporting along with asset allocation and risk budgeting advice, board reporting, and ongoing client education to provide a one-stop-shop for all risk needs

Bank

Risk analysis and hedge advisory

Daily risk reporting, hedge advisory, hedge execution, and back office support for mortgage bank/servicer

Insurer

Scenario analysis for regulatory reporting

Risk and cash flow analysis for entire portfolio across thousands of scenarios to support regulatory reporting for large insurer

Extensive product coverage

Support a wide range of fixed income and equity, as well as many types of derivatives and alternatives

Equity

- Listed Common Stocks
- Listed Preferred Stocks
- Convertible Preferred Stocks
- Sinking Fund Preferred Stocks
- Mutual Funds
- Participations
- ADR/GDR
- Tax Credits

Fixed Income

- Government/Agency Bonds
- Inflation Linked
- Corporates – Callable/Non-Callable
- Agency and Non-Agency CMOs
- Floating Rate Notes
- Tax Exempt Bonds
- Supranationals
- Short-Term /Cash Equivalents/CDs
- Convertible Bonds
- Money Markets
- Repos/Reverse Repos
- US MBS
- Whole Loans
- CMBS
- ABS
- CMO
- Emerging Markets
- Private Placements
- Bank Loans

Derivatives

- Forwards/Futures
- Swaps
- Asset Swaps
- Credit Default Swaps
- Currency Swaps
- Interest Rate Swaps
- Total Return Swaps
- Payer Swaptions
- Call/Put Options
- Currency Options
- Credit Linked Notes
- Residuals
- Contracts For Difference

FX

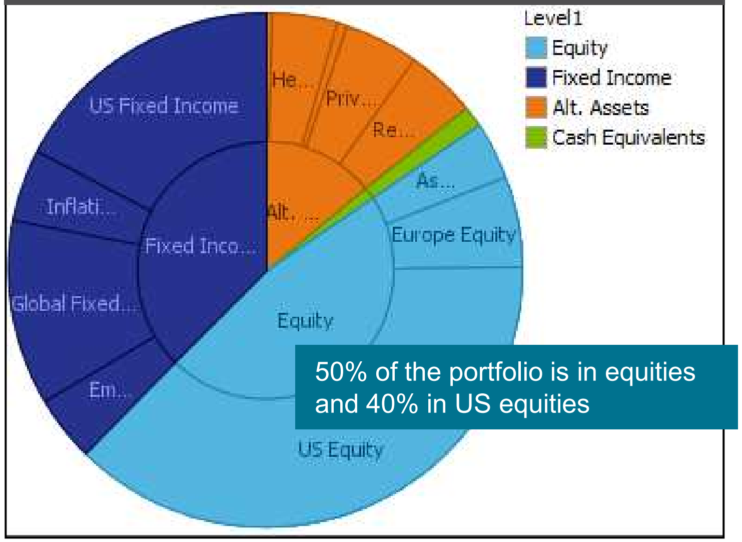
- Spot
- Forwards
- Non-Deliverable Forwards
- FX Swaps
- Single/Double Barrier Options
- One Touch Options
- Instant One Touch Options
- No Touch Options
- Double Touch Options
- Double No Touch Options
- Non-Deliverable Options

Alternatives

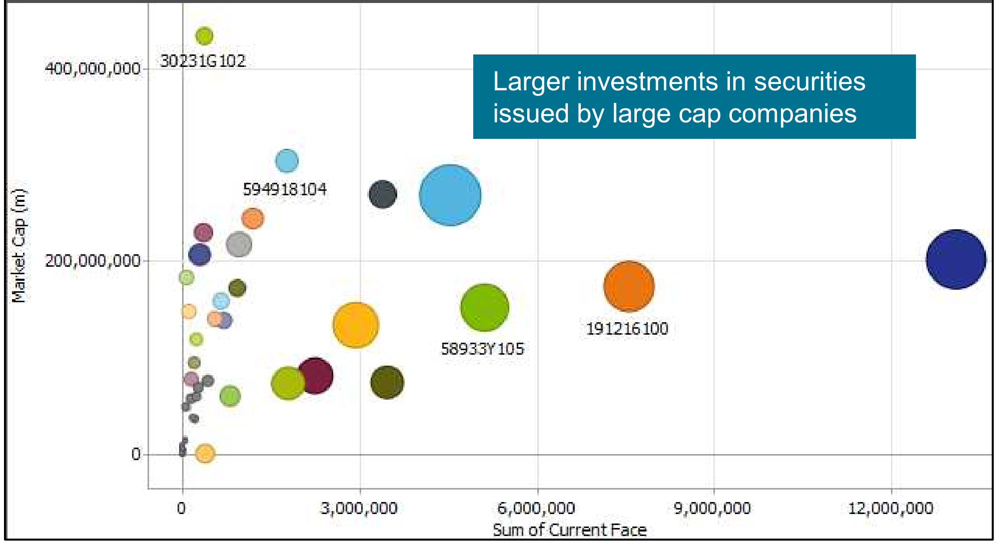
- Hedge Funds
- Private Equity
- Real Estate
- Commodities

Sample Aladdin Risk Analyses

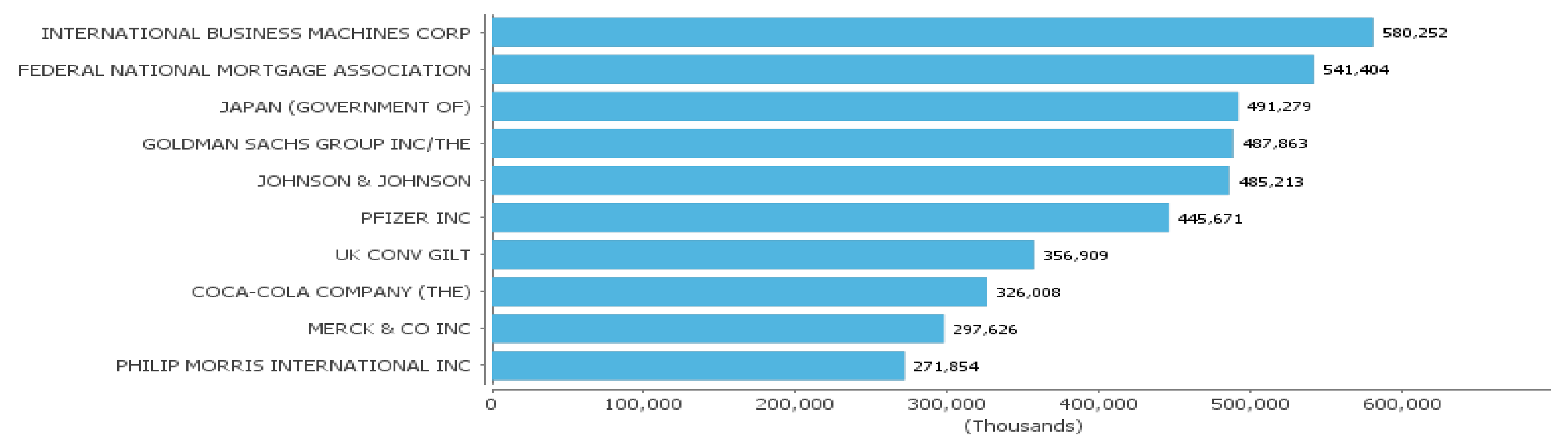
What is the overall asset breakdown of my portfolio?



How much of my portfolio is invested in large cap stocks?



What are my top 10 issuer exposures (notional MV)?



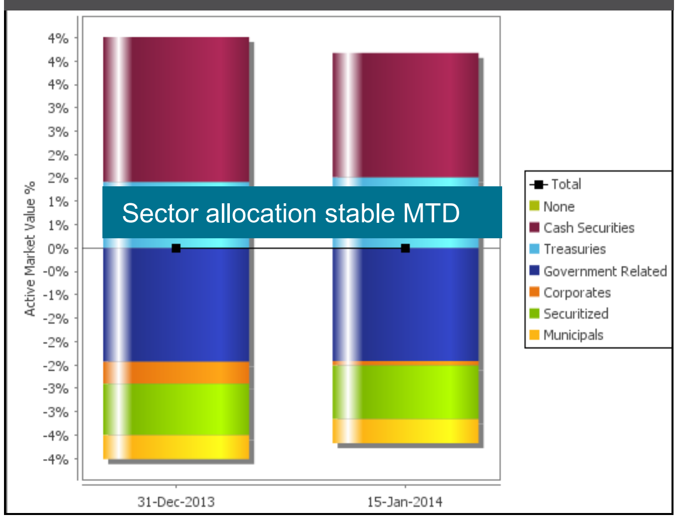
Portfolio Positioning & Exposures

Where is my exposure along the yield curve?

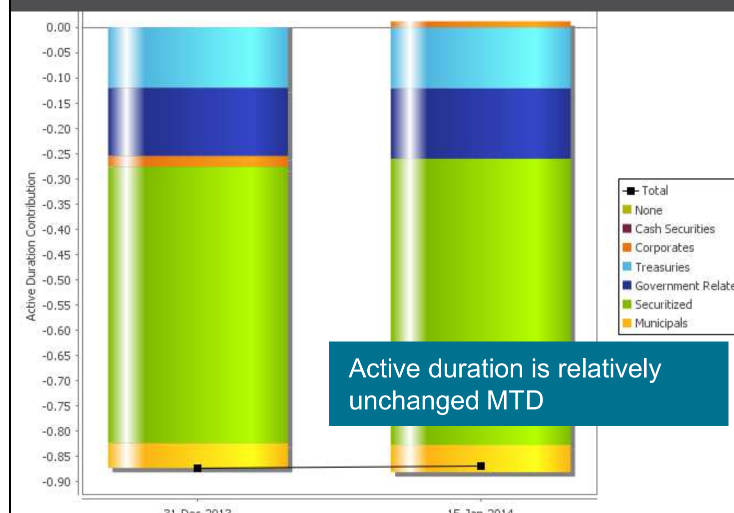
Security Description	Active Duration	Active KRD Contribution 3M	1Y	2Y	3Y	5Y	7Y	10Y	15Y	20Y	25Y	30Y
⊟ BRS-INSSPL	-0.87	0.03	0.00	-0.11	-0.15	-0.01	-0.04	-0.06	0.15	-0.04	-0.21	-0.44
⊞ Treasuries	-2.28	0.00	0.00	0.00	-0.03	-0.03	0.05	0.19	0.06	-0.06	-0.11	-0.19
⊞ Agencies	-2.26	0.00	-0.00	-0.01	-0.02	-0.04	-0.01	-0.01	-0.02	-0.01	-0.00	-0.00
⊞ Residential Mortgages	-1.78	0.01	0.03	0.00	-0.04	-0.05	-0.04	-0.06	-0.06	-0.04	-0.02	-0.01
⊞ CMBS	-1.47	0.00	-0.01	-0.02	-0.04	-0.03	-0.06	-0.06	-0.00			-0.00
⊞ ABS	-1.50	0.00	0.00	-0.03	-0.03	-0.02	-0.01	-0.01	-0.00	-0.00	-0.00	0.00
⊞ Investment Grade USD Corps	0.22	0.00	-0.01	-0.02	-0.05	0.04	0.03	-0.08	0.17	0.05	-0.06	-0.22
	2.37	0.00	0.00	0.00	0.01	0.10	0.12	-0.01	0.00	0.01	0.02	-0.00
	-0.08	0.00	-0.00	-0.00	0.04	-0.00	-0.02	0.04	-0.01	0.01	-0.02	-0.02
	-0.84	-0.00	-0.02	-0.03	-0.00	0.01	-0.11	-0.05	-0.00	-0.00		
⊞ Cash Securities	0.00	0.00										
⊞ None	0.00											

Short duration exposure along the longer end of curve

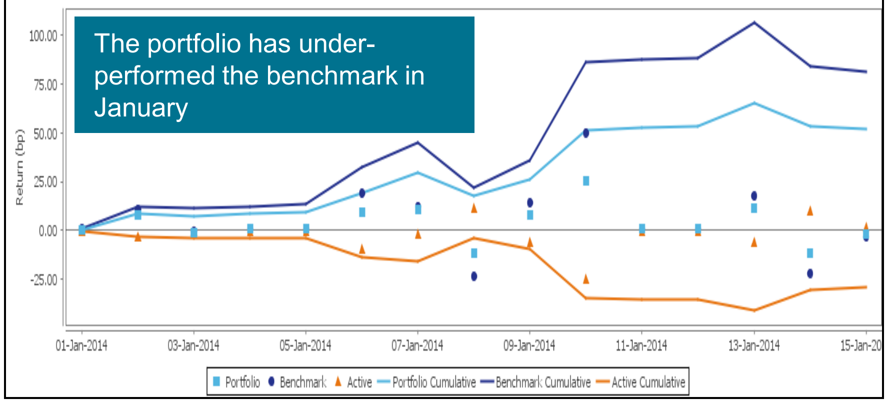
How has sector allocation changed?



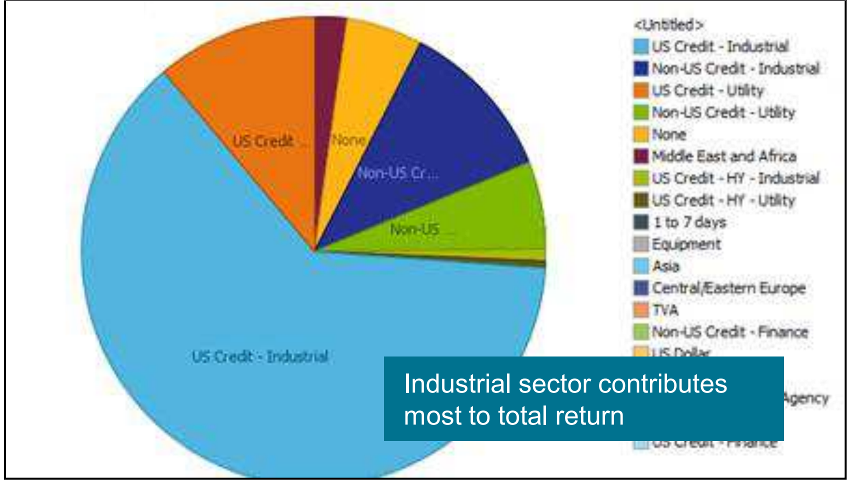
How has active duration changed?



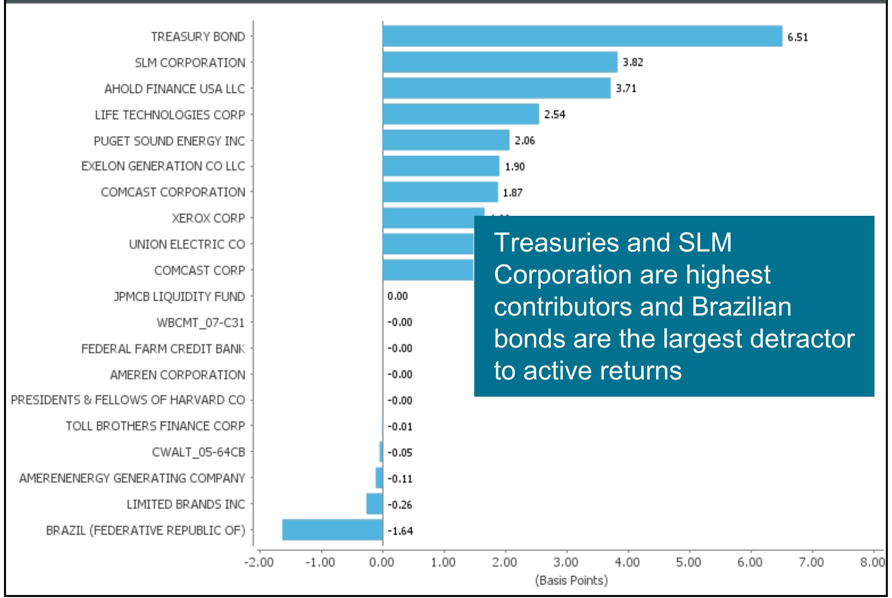
How did my portfolio perform this month?



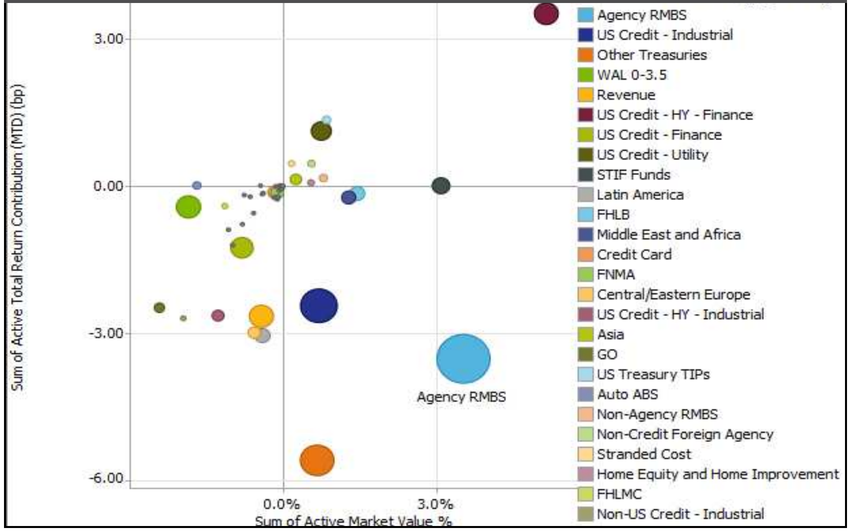
Which sectors are contributing to total return?



Which issuers are contributing to active return?



Which active bets drive active return?



What decisions drove my returns?

Description	Market Value Weight			Total Return Contribution			Active Co				Excess Return	
	Portfolio	Benchmark	Active	Portfolio (bp)	Benchmark (bp)	Active (bp)	FX Carry (bp)	[illegible]	[illegible]	[illegible]	Portfolio (bp)	Benchmark (bp)
GICS Equity Sector Breakdown (Level 1-2)	100.00%	100.00%	0.00%	76	-0	76	[illegible]	[illegible]	[illegible]	[illegible]	80.59	-0.00
Consumer Discretionary	3.11%	12.75%	-9.64%	5	-20	26	0.00	0.00	16	10	159.75	-153.03
Consumer Staples	33.42%	9.88%	23.55%	86	2	84	0.00	0.00	6	78	263.29	28.02
Energy	3.52%	10.28%	-6.76%	14	31	-16	0.00	0.00	-20	4	413.48	301.14
Financials	5.92%	16.13%	-10.21%	10	32	-21	0.00	0.00	-19	-1	179.03	201.22
Health	41.30%	13.04%	28.25%	-87	9	-96	0.00	0.00	18	-114	-203.69	75.38
Industrials	4.05%	10.89%	-6.84%	19	36	-15	0.00	0.00	-21	6	478.10	323.82
Information Technology	6.97%	18.21%	-11.23%	27	65	-37	0.00	0.00	-40	3	393.55	355.38
Materials	0.22%	3.44%	-3.22%	2	16	-13	0.00	0.00	-14	1	901.73	454.93
Telecommunication	1.18%	2.33%	-1.14%	-1	-1	-0	0.00	0.00	1	-1	-89.26	-28.51
Utilities	0.30%	2.96%	-2.67%	0	2	-1	0.00	0.00	-1	0	122.97	58.58
Other	0.00%	0.09%	-0.09%	0	-0	0	0.00	0.00	0	0	0.00	-137.74
Unassigned	0.00%	0.00%	0.00%	0	-171	165	0.00	0.00	165	0	0.00	0.00

Most of the underperformance in this Equity portfolio was driven by poor security selection, particularly in the Health Sector

How do I further explain excess returns?

Description	Market Value Weight			Total Return Contribution			Active Contribution					
	Portfolio	Benchmark	Active	Portfolio (bp)	Benchmark (bp)	Active (bp)	Duration (bp)	Convexity (bp)	Curve (bp)	Convexity Curve (bp)	Risk Free (bp)	Roll Down (bp)
Extended Core Breakout	100.00%	100.00%	0.00%	51.90	81.06	-29.16	-27.57	-0.40	6.45	0.12	-0.03	-3.41
Treasuries	8.46%	9.93%	-1.47%	8.58	12.83	-4.26	-4.16	-0.10	-0.01	0.04	-0.00	-0.20
Agencies	3.39%	4.99%	-1.60%	0.33	1.42	-1.09	-1.72	0.00	0.97	-0.01	-0.00	-0.31
Residential Mortgages	19.70%	22.32%	-2.62%	11.81	15.20	-3.37	-5.69	-0.15	0.85	0.02	-0.00	-0.94
CMBS	4.24%	10.00%	-5.77%	0.55	3.20	-2.65	-3.06	-0.02	1.89	0.00	-0.00	-0.57
ABS	2.86%	5.00%	-2.14%	0.71	0.33	0.39	-1.26	-0.00	1.14	0.00	-0.00	-0.24
Investment Grade USD Corps	16.71%	24.88%	-8.17%	23.91	30.22	-6.32	-8.96	-0.14	1.00	0.05	-0.01	-0.92
High Yield USD Corps	5.41%	4.60%	0.81%	3.68	3.92	-0.24	1.93	0.02	-0.82	0.00	0.00	0.40
Emerging Markets	5.69%	7.26%	-1.57%	-0.08	6.20	-6.28	-1.22	-0.02	-0.18	0.00	-0.00	-0.13
Munis	5.25%	10.69%	-5.44%	2.41	7.74	-5.34	-3.44	-0.00	1.62	0.00	-0.02	-0.50
Cash Securities	28.30%	0.33%	27.97%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Most of the active return was driven by negative duration return as the portfolio was long duration and rates backed up in this period

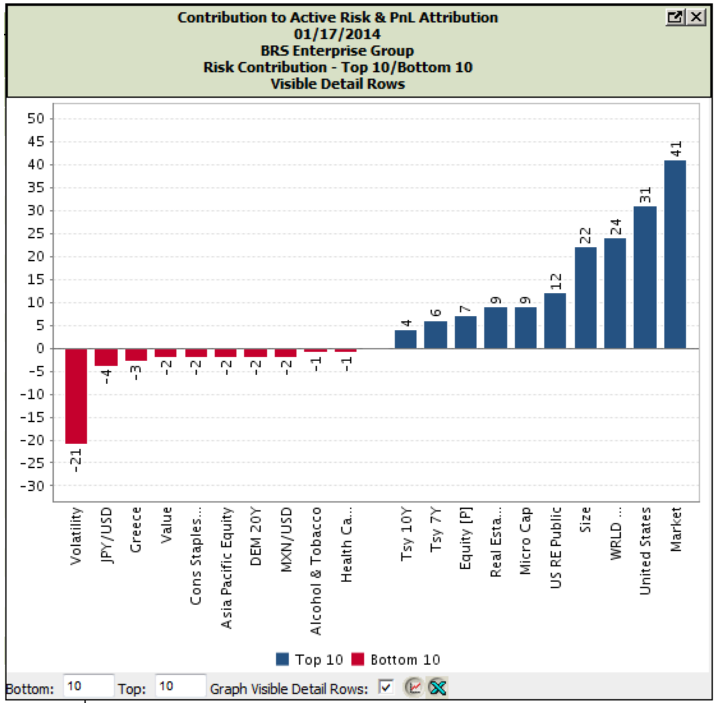
Portfolio Risk & Scenario Analysis

What are the top contributors to my active risk?

Portfolio	Exposure Date	Exposure Hierarchy	Purpose	NAV	CCY	Model Map	DxS Block
BRS-PENP vs. BAR30RUS15	1/17/2014	^WRLDA,DEFAULT	^^WRLDA,DEFAULT	19,576,627,290	USD	GC	DXS_BLOCK

Risk Group	Factor Level	Factor Vol	Credit Beta	Exposure	Stand-alone Risk	Risk Contribution
Equity		matrix...			137	108
WRLD Style		matrix...		0.25	80	42
Market	244.76	1,059		0.07	69	41
Size	105.48	183		0.30	54	22
Volatility	74.51	352		-0.14	51	-21
Momentum	291.00	254		0.03	7	1
Reversal	41.35	141		0.02	3	-0
Liquidity	94.77	180		0.00	0	0
Smallcap	57.89	168		-0.00	0	0
Value	226.66	160		-0.04	7	-2
Profitability	150.96	92		0.11	10	0
Earnings Yield	118.92	97		0.06	6	-0
Dividend Yield	109.77	85		-0.02	1	0
Growth	74.30	76		-0.07	5	1
Leverage	78.70	82		-0.02	2	0
Sentiment	94.27	82		0.00	0	-0
Emerging	101.30	101		0.01	1	0
Oil	96.13	93		-0.05	4	1
WRLD Country		matrix...		6.52	70	31
Equity Specific		matrix...		0.01	73	24
WRLD Sector		matrix...		6.52	58	11
Alternative		matrix...			151	98
Rates		matrix...			64	24
Foreign Exchange		matrix...			35	-6
Inflation		matrix...			8	-2
Volatility		matrix...		-0.23	2	0
Spreads		matrix...			14	-0
Total		**matrix...**			**223**	**223**

Easily identify risk factors driving active risk



What is my expected P&L relative to the benchmark under stress scenarios?

GREENPACKAGE

Stress Test - Active - Stock Return Model | 12/31/2013

BRS Enterprise Group

Market Index	1Yr GOVT	2Yr GOVT	3Yr GOVT	5Yr GOVT	10Yr GOVT	30Yr GOVT	1M Libor	3M Libor	FGPC Yld	FNPC Yld	5Y SwSp	10Y SwSp	3X5 SwVol	CDX.NA.HY.21	CDX.NA.IG.21	CDX.NA.EM.20
USD	0.1156	0.3838	0.7645	1.7394	3.0132	3.9477	0.1677	0.2461	3.5961	3.5540	4.3	5.9	0.79	306.7	62.4	273.6
EUR	0.1330	0.2020	0.3755	0.9235	1.9380	2.7420	0.2160	0.2870	3.5961	3.5540			0.64	306.7	62.4	273.6
JPY	0.0805	0.0950	0.1335	0.2350	0.7390	1.7300	0.1086	0.1479	3.5961	3.5540			0.25	306.7	62.4	273.6

				MSCI World (-12.45%)		MSCI World (+12.45%)		Credit Spread (+100bps)		VIX 50 (+1000bps)		Brent Crude (-15.7%)		Commodity Decrease (-15%)		Interest Rates Increase (+100bps)	
Portfolio/Group	NAV	StoRM Beta	95% Active Risk	%	Value (m)	%	Value (m)	%	Value (m)	%	Value (m)	%	Value (m)	%	Value (m)	%	Value (m)
BRS Enterprise Group	19,721,778	1.07	3.06	-0.97	-190,755	0.96	190,219	-3.29	-649,486	-0.58	-114,116	-0.27	-52,301	-0.10	-19,590	1.39	273,906
Equity	9,724,580	0.83	6.11	2.08	201,806	-2.08	-201,806	6.15	598,334	0.92	89,568	0.50	48,479	1.33	129,006	1.92	186,805
US Equity	7,713,771	0.81	6.70	1.95	150,793	-1.95	-150,793	5.29	407,960	1.49	115,040	0.75	57,890	1.33	102,864	1.26	97,202
BRS-EQ-US1	2,972,961	0.75	9.00	3.00	89,236	-3.00	-89,236	10.46	311,020	2.07	61,544	1.44	42,833	2.33	69,129	0.66	19,624
BRS-EQUS1A	1,253,928	1.00	0.06	-0.01	-119	0.01	119	0.04	550	-0.01	-94	-0.01	-93	-0.01	-101	-0.01	-81
BRS-EQUS1B	999,033	1.00	0.47	-0.00	-48	0.00	48	0.38	3,772	0.02	235	-0.01	-130	-0.02	-177	0.03	340
BRS-EQ-US2	1,595,978	0.65	17.18	2.61	41,629	-2.61	-41,629	3.13	50,011	2.35	37,551	0.49	7,800	1.32	21,034	3.85	61,456
BRS-EQUS1C	642,616	1.00	0.47	-0.01	-83	0.01	83	0.36	2,312	0.02	109	-0.02	-109	-0.02	-153	0.02	132
BRS-EQUS1D	249,256	1.00	0.47	0.00	12	-0.00	-12	0.38	939	0.03	73	-0.01	-18	-0.01	-21	0.02	47
Europe Equity	1,266,038	0.93	11.20	0.73	9,260	-0.73	-9,260	4.07	51,484	0.64	8,082	0.41	5,146	0.54	6,828	2.54	32,214
Asia Pacific Equity	744,771	1.00	0.15	-0.01	-98	0.01	98	-0.23	-1,683	-0.01	-83	-0.00	-12	-0.01	-81	0.08	580
Fixed Income	7,036,887	1.01	1.45	0.15	10,394	-0.15	-10,532	-0.19	-13,183	0.20	14,185	0.06	4,566	0.01	364	-0.24	-16,778
US Fixed Income	3,310,631	1.00	0.72	-0.05	-1,611	0.05	1,652	-0.18	-5,898	-0.03	-1,002	-0.04	-1,425	-0.03	-982	0.19	6,336
Global Fixed Income	1,998,888	1.28	3.08	0.03	550	-0.02	-496	2.37	47,402	0.37	7,376	0.17	3,385	-0.16	-3,119	-1.48	-29,538
Global Inflation Linked	1,018,428	0.82	3.11	0.22	2,205	-0.22	-2,278	-2.80	-28,467	0.01	65	-0.00	-27	0.16	1,664	1.40	14,308
Global Emerging Markets	708,940	0.67	6.87	2.20	15,614	-2.23	-15,795	-0.21	-1,474	1.08	7,630	0.46	3,227	0.81	5,733	1.46	10,383
Alternatives	2,960,311	1.11	10.15	-3.04	-89,887	3.04	89,887	-9.81	-290,503	-1.37	-40,484	0.77	22,936	-0.88	-25,994	-1.38	-40,983
Real Assets	244,517	0.33	21.18	-1.63	-3,986	1.63	3,986	2.69	6,587	-0.47	-1,160	5.79	14,161	1.28	3,122	-6.02	-14,721
Private Equity	966,400	1.44	18.39	-7.33	-70,857	7.33	70,857	-19.45	-187,948	-3.54	-34,256	-2.34	-22,646	-4.15	-40,108	-2.98	-28,805
Real Estate	923,165	0.49	21.75	5.52	50,998	-5.52	-50,998	1.40	12,892	3.50	32,294	1.37	12,606	1.35	12,456	-0.45	-4,188
Hedge Funds	826,228	173.86	14.53	-5.11	-42,216	5.11	42,216	-11.15	-92,145	-2.55	-21,083	-1.41	-11,628	-2.13	-17,558	-0.60	-4,949

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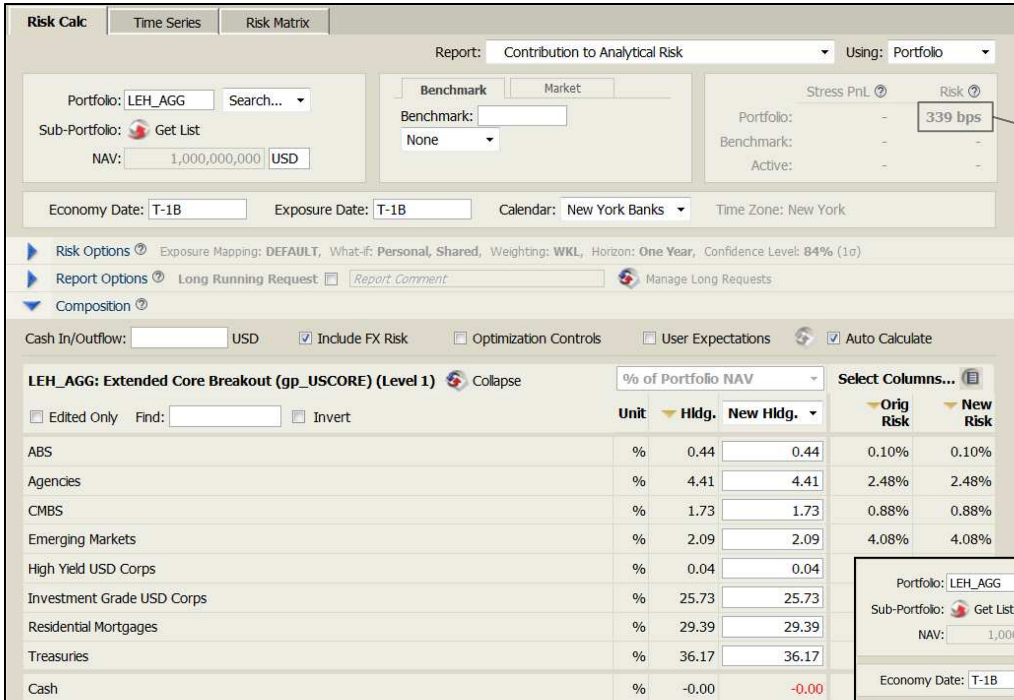
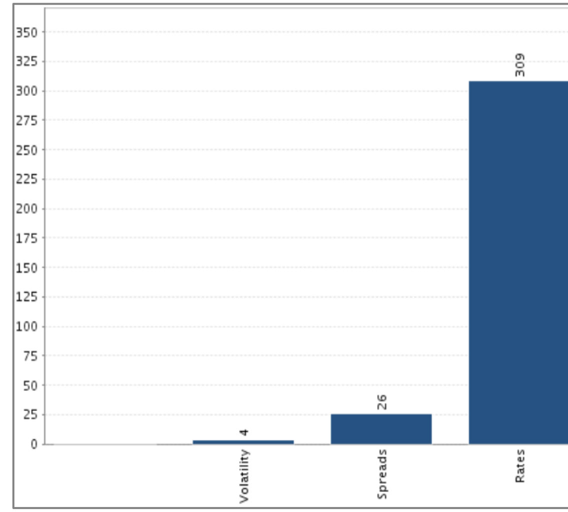
How do I allocate my portfolio to protect against a rising rate environment?

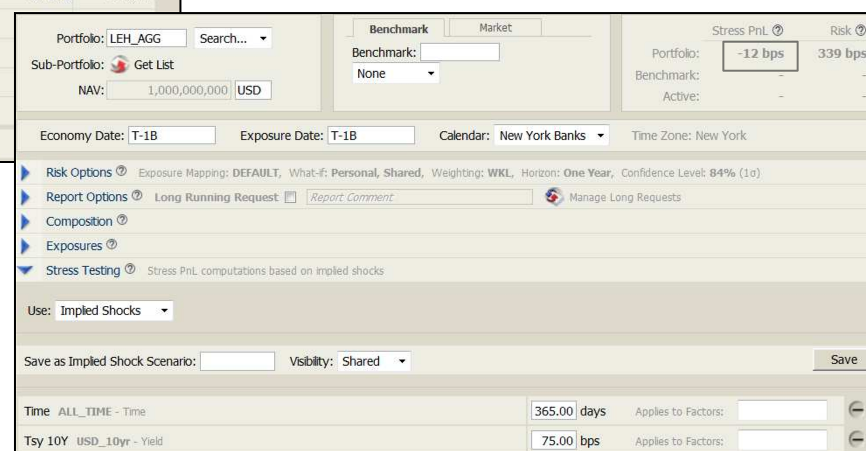
Illustrative Portfolio - Barclays Aggregate



	Unit	Hldg.	New Hldg.	Orig Risk	New Risk
ABS	%	0.44	0.44	0.10%	0.10%
Agencies	%	4.41	4.41	2.48%	2.48%
CMBS	%	1.73	1.73	0.88%	0.88%
Emerging Markets	%	2.09	2.09	4.08%	4.08%
High Yield USD Corps	%	0.04	0.04		
Investment Grade USD Corps	%	25.73	25.73		
Residential Mortgages	%	29.39	29.39		
Treasuries	%	36.17	36.17		
Cash	%	-0.00	-0.00		

Contribution to Portfolio Risk





- Duration: 5.09
- Annualized Risk: 339 bps
- Rate backup of 75 bps over 1 year horizon causes the Barclays aggregate to lose -12 bps wiping out carry

Option 1 – Barclays Gov't/Credit 1-3 YR

Portfolio: LEH1-3YRGC Search...
Sector: No Sector Selected
NAV: 1,000,000,000 USD

Benchmark | Market
Benchmark:
None

	Stress PnL	Risk
Portfolio:	-	75 bps
Benchmark:	-	-
Active:	-	-

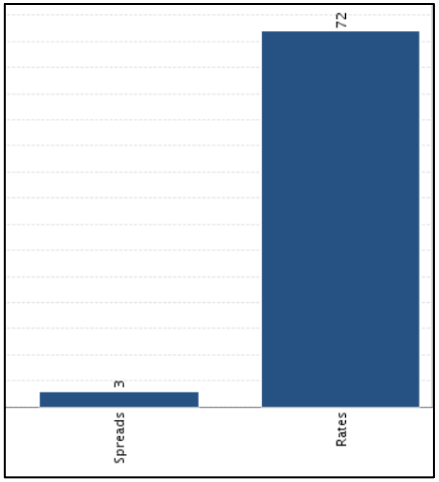
Economy Date: T-1B Exposure Date: T-1B Calendar: New York Banks Time Zone: New York

Risk Options Exposure Mapping: DEFAULT, What-if: Personal, Shared, Weighting: DLY, Horizon: One Year, Confidence Level: 84% (1σ)
Report Options Long Running Request Report Comment Manage Long Requests
Composition
Cash In/Outflow: USD Include FX Risk Optimization Controls User Expectations Auto Calculate

LEH1-3YRGC: Sector Sector Breakdown (@gr SECTORS) (Level 1) Collapse % of Portfolio NAV Select Columns...
Edited Only Find: Invert

	Unit	Hldg.	New Hldg.	Orig Risk	New Risk
IG Credit	%	19.61	19.61	25.09%	25.09%
Spread Products	%	15.40	15.40	14.01%	14.01%
UST/Gov Guar	%	64.97	64.97	60.90%	60.90%
Cash	%	0.01	0.01	0.00%	0.00%

Contribution to Portfolio Risk



Option 1: Short Duration Barclays Gov't/Credit 1-3Yr

- Sector allocation dominated by Treasuries
- Duration: 1.92
- Annualized Risk: 75 bps

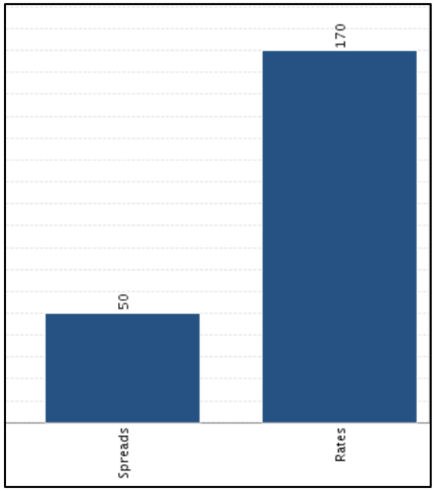
Option 2 – Custom Unconstrained Portfolio

Composition
Cash In/Outflow: USD Include FX Risk Optimization Controls User Expectations Auto Calculate

LEH_AGG: Extended Core Breakout (gp_USCORE) (Level 1) Collapse % of Portfolio NAV Select Columns...
Edited Only Find: Invert

	Unit	Hldg.	New Hldg.	Orig Risk	New Risk
Investment Grade USD Corps	%	25.37	10.00	31.24%	17.72%
Treasuries	%	36.25	10.00	30.63%	11.24%
Residential Mortgages	%	28.92	10.00	30.61%	14.71%
Emerging Markets	%	2.06	8.00	4.01%	27.55%
Agencies	%	4.45	4.45	2.51%	3.51%
CMBS	%	1.75	7.00	0.87%	5.54%
ABS	%	0.44	10.00	0.10%	3.39%
High Yield USD Corps	%	0.04	10.00	0.03%	16.34%
Cash Securities	%	0.72	0.72	0.00%	0.00%
Cash	%	-0.00	29.83	0.00%	0.00%

Contribution to Portfolio Risk



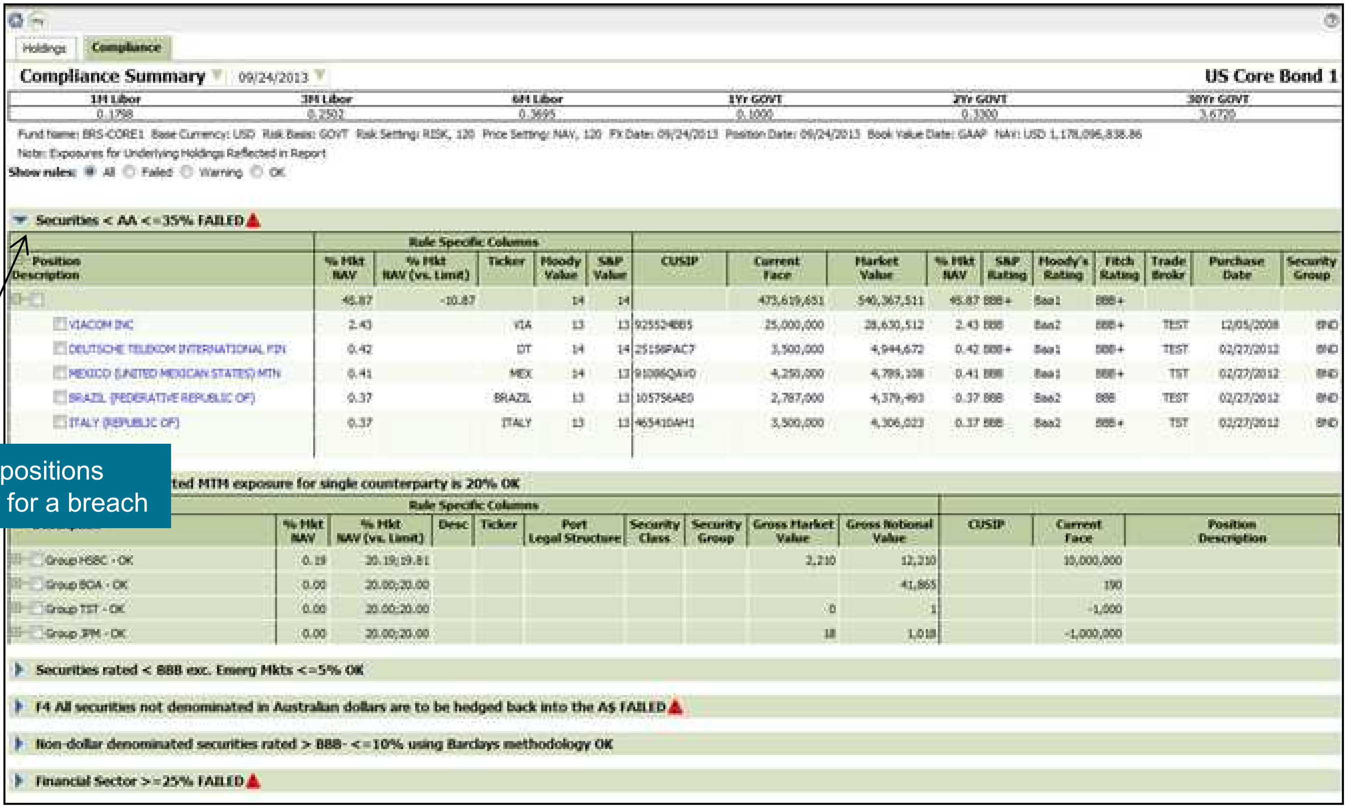
Option 2: Custom unconstrained portfolio using Barclays aggregate as starting point

- Trade out of rate products into spread
- Duration: 3.25 years
- Annualized risk : 222 bps is more balanced in sources of risk
  - Reduce rates
  - Increase spreads

Offer a series of compliance reports

- Summary level reports show portfolio standing relative to compliance rules
- Detailed reports show all violations for each portfolio
  - Drill-down to view the underlying securities causing the violation

Are there any legal mandates being violated across the organization?



Find the underlying positions that are responsible for a breach

Appendix:
Fixed Income Risk Models and Analytics

Fixed income risk: Fundamental risk model

Robust multi-factor fixed income risk modeling

BRS computes the sensitivity of portfolio holdings to the following factors

- Calculations leverage the full suite of BRS interest rate and mortgage prepayment/credit models

Risk Factor Type	Sensitivity (Exposure)
Foreign Exchange Rate	% Market Value
Interest Rate	Key Rate Duration and Key Rate Bucket Convexity
Spread	Spread Duration
% Spread	Spread Duration · Spread
Inflation Rate	Inflation Key Rate Duration
Mortgage Rate Basis	Mortgage Rate Basis Duration
Implied Interest Rate Volatility	Normal Volatility Duration

Risk factor sensitivities are calculated every day for each position and aggregated at the portfolio/portfolio group levels

Model benefits

- Risk factors across fixed income provides granularity for global portfolios
- Wide range of fixed income securities as well as derivatives and rates covered
- Broad sector coverage
- As an active participant in every major liquid market, BlackRock is both a user and provider of our models
- Models are adapted as the market moves
- Risk factor data captured on a high frequency basis leading to responsive risk forecasts

Fixed income risk: Interest rate models and valuation methods

Offer several proprietary implementations of interest rate models

Current model is a proprietary Two Factor Interest Rate Model (HW2F)

- Variant of the two-factor Hull White model
- Short rate model extends the original Hull White model by allowing short and long rates to vary in a correlated fashion
- Incorporates changes in slope and curvature
- Uses a dynamic path count algorithm, based on the structure of the security, to determine the appropriate number of interest rate paths to use in simulation

Full interest rate model suite includes:

- Black Karasinski
  - Lognormal single factor short rate model
  - Time dependent mean reversion term structure of volatility
- Black Derman Toy
  - Lognormal single factor short rate model
  - Constant volatility with no mean version
- Hull White
  - Normal single factor short rate model
  - Time dependent mean reversion term structure of volatility
- Ho Lee
  - Normal single factor short rate model
  - Constant volatility with no mean reversion

Recommended valuation methods for selected instruments

Our research has identified that a blend of models based upon product type best represents portfolio analytics:

Security Types	Default Valuation Method
Bullet Bonds, CMBS, ABS	Forward Curve Valuation
US: Callable Agency Bonds, Bermudan Swaptions, Cancelable Swaps, Callable/Puttable Corporate	HW2F Lattice Backward Induction
Zero coupon callable swaps	Longstaff-Schwartz Method
Fixed Coupon Callable Bonds	HW2F Backward Induction
Non-$ Bonds, US Municipal	Hull-White or Black-Derman-Toy Lattice Backward Induction
US Mortgages, CMOs	HW2F Monte Carlo Simulation
Danish Mortgages	Ho Lee Monte Carlo Simulation
Vanilla Swaptions, Caps, Floors	Normal Analytical Model
Swaps, Rate Futures, FX, Currency Swaps	Forward Curve Valuation
FX Options	Garman Kohlhagen Analytical Model
Futures	Normal Futures Model
Bond Options	Black Analytical Model
Mortgage Options	Lognormal Mortgage Option Model
Asian Index Options	Vorst Analytical Model
American Index Options	Barone-Adesi Whaley Analytical Model

Fixed income risk: Credit models and valuation methods

Offer several proprietary implementations of credit models

Credit modeling provides alternative default-adjusted analytics for various cash instruments

- Corporates (bullet and callable)
- Preferred Equity
- Loan (assumes no cancellability)
- Sovereigns

All credit instruments support calculation of key spread durations as price sensitivities to particular points (maturities) along a CDS curve

Alternative correlation product models include:

- Time-to-default simulation Monte-Carlo (historic, uses CDS spreads)
- State-Dependent Hazard Rate Model (under construction)
- Other models are being investigated

Recommended valuation methods for selected instruments

Our research has identified that a blend of models based upon product type best represents portfolio analytics:

Security Types	Default Valuation Method
Credit Default Swaps	Reduced Form Model
Credit Default Swaptions	Black's Model
Credit Tranche	Gaussian Copula with Base Correlations
Credit Index	Reduced Form Model
Credit Bespoke Baskets	Theoretical portfolio analysis based on the Reduced Form Model valuation of the components
Credit Bespoke Tranche	Loss Copula (under construction)
Nth to Default Basket	Gaussian Copula with Single Correlation
CSO-squared	Time-to-default Monte Carlo Simulation
Preferred Equity	Forward Curve

Fixed income risk: Agency & non-agency prepayment model suite

Mortgage Research team is comprised of over 30 professionals

- Implemented a full suite of over 70 mortgage prepayment and credit models

Agency models are estimated from pool-level data

- Updated to reflect current economic environment and policy impact
- Incorporate credit components in prepayment, ie, buyout and loan modification

Mortgage rate projections are a key model driver

- Use 2-yr, 5-yr, 10-yr CMS and swaption volatility as driving factors
- Use HSH survey rates for jumbos and hybrids

Agency Model Coverage

- Conventional Fixed-Rate models
- Conventional Hybrid ARM models
- GNMA Fixed-Rate models
- GNMA Hybrid ARM models
- Conventional & GNMA 1-year (CMT) models
- Prepay Penalty Fixed-Rate models

Agency & Non-Agency Prepay Model

Turnover Component

- Seasoning
- Lock-in
- State Level HPA
- Seasonality
- Existing Home Sales
- Buy Down
- Yield Curve at Origination
- Current LTV
- Property Type
- Occupancy
- State
- IO vs. Non-IO

Refinance Component

- HPA
- FICO
- Current LTV
- SATO
- Prop. Type
- Occupancy
- State
- IO vs. Non-IO
- Penalty
- Loan Size
- Refi Incentive
- Seasoning
- Media Effect
- Yield Curve Effect
- Path-Dependent Burnout

Buyout Component

- Loan Size
- Age
- HPA
- FICO
- Incentive
- SATO
- Cumulative Buyout

Fixed income risk: Non-agency credit models

Non-agency models are estimated from loan-level data

- Newly estimated econometric models reflect current market conditions
- Improved structure to incorporate many loan-level characteristics including HPA, prepayment penalty, FICO, LTV, IO, cash-out percentage and documentation type
- Built-in interactions of housing market with many credit variables
- Combine Loan Performance and Intex data

Home price appreciation (HPA) is a critical factor in credit models

- Historical Case-Shiller data is collected at the zip code-level to compute the historical HPA and current LTV
- A short-term view is derived using a simple time-series model to project HPA forward for three quarters
- A long-term view is derived using the 30-year average of real HPA and the implied market inflation from TIPS

Non-Agency Model Coverage

- Prime Jumbo Fixed-Rate
- Prime Jumbo Hybrid
- Prime Jumbo ARM
- Alt-A Fixed-Rate
- Alt-A Hybrid
- Subprime Fixed-Rate
- Subprime ARM
- Manufactured Housing & 2nd Lien (Subprime)
- MTA Option ARM

Non-Agency Credit Model Structure

Default / Delinquency	HPA Combined LTV SATO Age FICO Documentation Purpose Payment Shock Debt to Income (DTI) Property Type Loan Size Occupancy Prepayment Speed Delinquency-based Default Multiplier
Loss Severity	HPA Original Loan Size LTV Loan Age Home Equity SATO Insurance Judicial State Occupancy Loan Purpose

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NEW YORK • 8 – 12 SEPTEMBER 2014

Asset Class Spotlight – Global Rates

PAVAN WADHWA, MANAGING DIRECTOR

Although the labor market continues to show improvement…

Blackrock has created a "Yellen index" to track labor market recovery

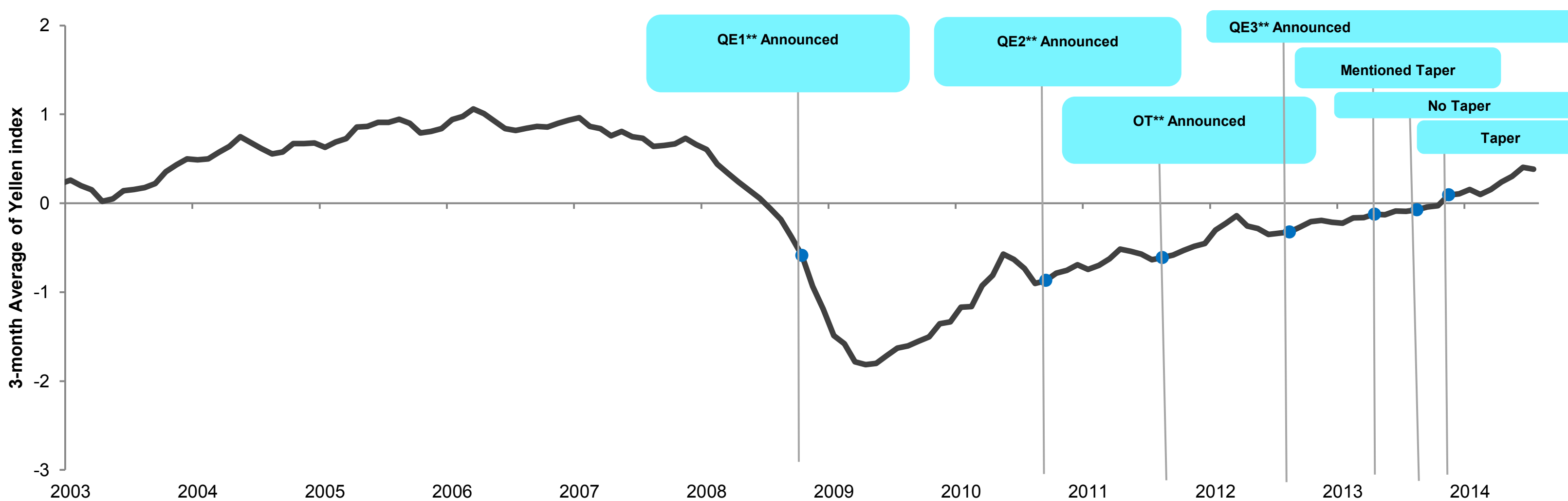
	Yellen Index	Unempl rate	Long-Term unempl rate	U-6 rate	Nonfarm Payroll	Household empl	Hires rate	Quits rate	Openings rate	Vacancy/unempl ratio	GDP YoY
Weight		15%	10%	15%	25%	5%	5%	5%	5%	5%	10%
Jul Data		6.2	2.0	12.2	209	131					2.4
Jul Z-Score	0.30 (prelim*)	0.3	0.1	0.0	0.6	0.2					0.3
Jun Data		6.1	2.0	12.1	298	407	3.5	1.8	3.3	49%	2.4
Jun Z-Score	0.51	0.4	0.1	0.0	1.0	1.0	0.1	0.2	1.5	0.7	0.3
10y Avg		6.8	2.1	12.1	60	71	3.5	1.8	2.6	39%	1.8
10y SD		1.8	1.2	3.2	245	347	0.3	0.3	0.4	16%	1.9

Note: Yellen index is the weighted average of the z-scores of all the components listed above

****Fed actions**

- **QE1**: Fed bought $1.25 tn MBS, $300bn Tsy & 175bn agency debt
- **QE2**: Fed bought $600bn Tsy over 8 months ($75bn/month)
- **Operation Twist**: Fed extended the duration of Fed's portfolio by selling shorter-term Tsy to buy longer-term Tsy
- **QE3**: Fed started open-ended purchases of $45bn Tsy and $40bn MBS per month

3-month average of Yellen index



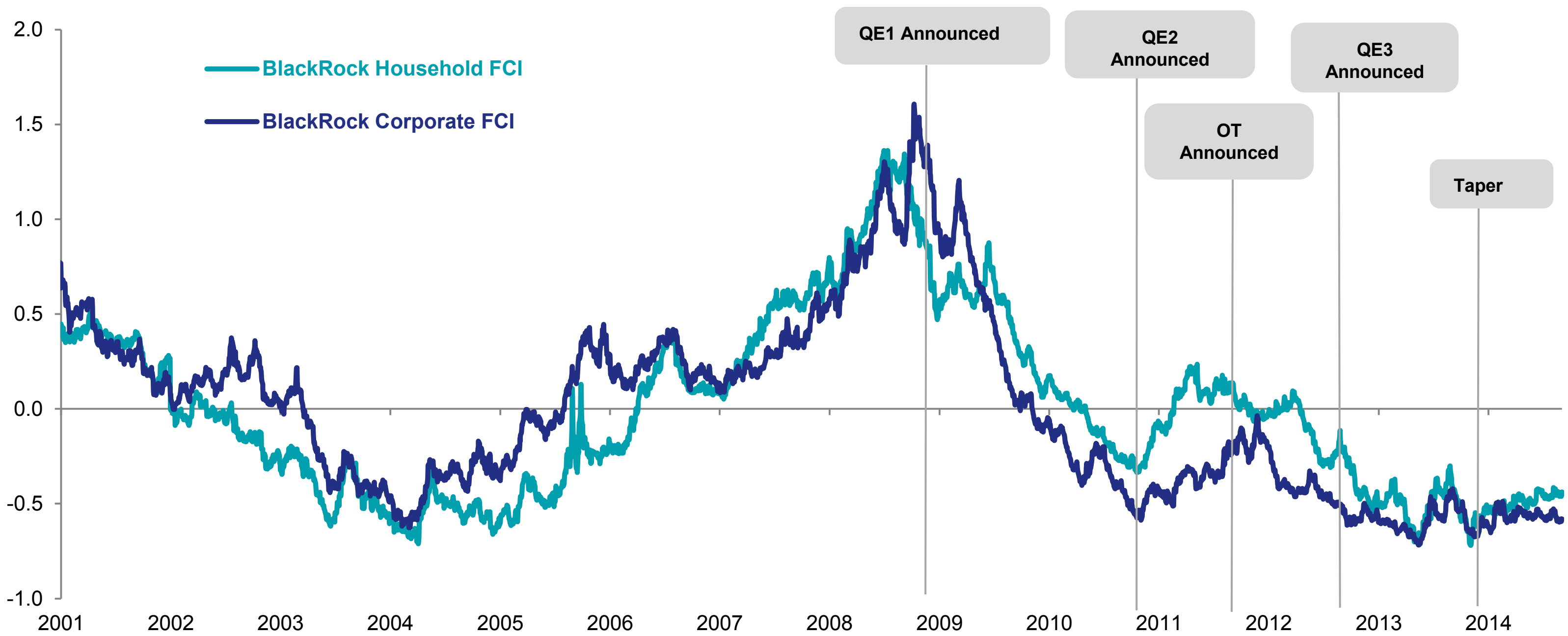
Source: BlackRock; Bloomberg; Federal Reserve Bank

…and financial conditions remain close to their easiest levels ever…

BlackRock's financial condition index (FCI)

Blackrock has created a household and corporate financial conditions index to assess how tight financial conditions are

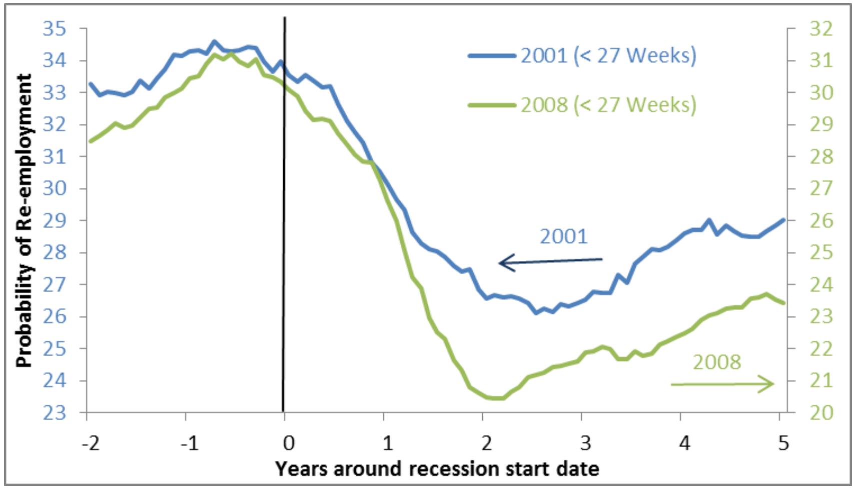
	Rate Markets			Spread Markets	Asset Prices		Energy		
	FFR	5y Swap	Mortgage Rate	IG Spread	Equity Performance	House Price	Crude Oil	Gasoline	Nat Gas
BLK Household FCI Weights	6%		29%		12%	29%		24%	
BLK Corporate FCI Weights	10%	24%		19%	19%	5%	14%		10%



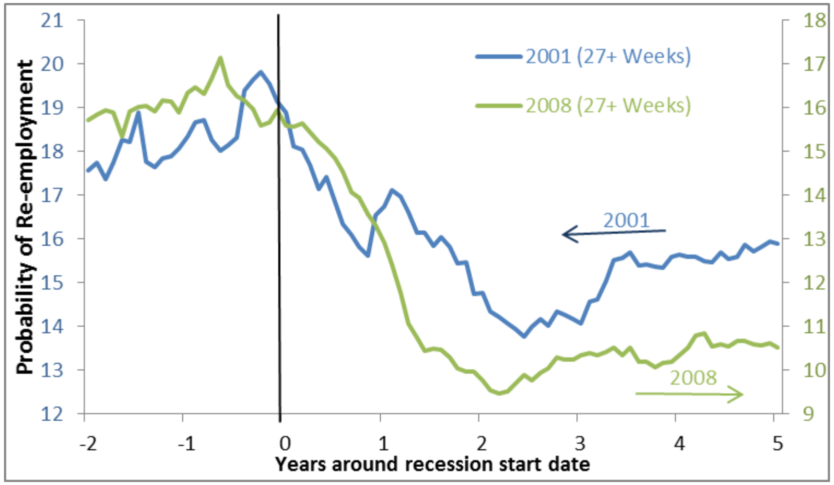
Source: BlackRock; Bloomberg; JPM Dataquery

…Yellen remains concerned about the potential impact of raising policy rates on the long-term unemployed…

Monthly probability of reemployment for the <27 week cohort in the years surrounding the 2001 vs 2008 recession (12M average; %)



Monthly probability of reemployment for the 27+ week cohort in the years surrounding the 2001 vs 2008 recession (12M average; %)



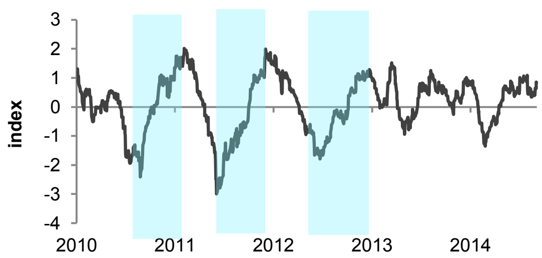
- The pattern of probability of reemployment has been similar for both recessions,…
- …but the probability of reemployment dipped significantly more in the 2008 recession for both cohorts (not surprising)
- The <27 week cohort probability has recently been increasing at the same rate as it was in 2001, suggesting that the healing of the short term unemployed is proceeding at a normal pace…
- …but the rate of increase of the 27+ week cohort has been just over half in the 2008 recession compared to the 2001 recession. The healing of the long term unemployed is therefore impaired.

Yellen's response to a question on 15 July 2014 (Humphrey Hawkins): "And in fact, long-term unemployment has declined, and the evidence that I've seen, although perhaps not utterly definitive, suggests that the decline in long-term unemployment does, on balance, reflect those who have experienced long spells getting jobs and moving into employment, and not simply becoming so discouraged that they move out of the labor force.

Source: BlackRock; Bloomberg; Bureau of Labor Statistics

…even as data has improved considerably without a commensurate rise in yields, and some economic data are stronger than at the start of prior tightening regimes

GS MAPS index since 2010



Projected change in 5Y swap yields in the most recent data-improvement episodes (Feb-Jul 2014) based on the past few episodes of improving economic data

	Date			GS MAPS			5Y Swap Yield (%)		
	From	To	Period (month)	From	To	Chg	From	To	Chg
	8/25/2010	2/4/2011	5.4	-2.4	2.0	4.4	1.61	2.48	0.87
	6/21/2012	12/21/2012	6.1	-1.8	1.3	3.1	1.00	0.88	-0.12
	5/1/2013	8/6/2013	3.2	-0.9	1.3	2.2	0.82	1.57	0.75
Average over the 3 periods above	-	-	4.9	-	-	3.2	-	-	0.50
Current period	2/25/2014	9/3/2014	6.3	-1.4	0.8	2.2	1.62	1.79	0.18
							Predicted chg in 5y yld		0.34

3M MA of various economic data; current vs. averaged immediately prior to the end of an easing cycle vs. averaged immediately post the start of a tightening cycle

Note: we consider indicator to be neutral if current economic data is between the average observed between the end of an easing cycle* and the start of a tightening cycle**

Footnotes:

* Average over the past 4 easing periods which ended Jun 2003, Nov 1998, Jan 1996, and Sep 1992 respectively.

** Average over the past 3 tightening periods which started in Jun 2004, Jun 1999, and Feb 1994 respectively.

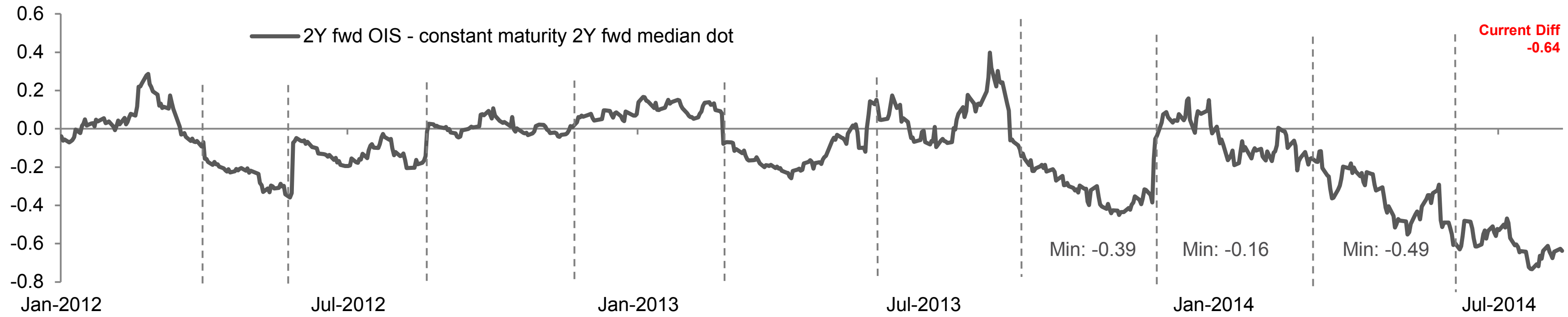
*** For GDP QoQ we use the average over the past two quarters. For all the other data we use 3M moving average.

	Current 3M Avg	3M Avg Immediately before Easing Stopped*	3M Avg Immediately after Tightening Started**	Current Indication
GDP QoQ***	1.1	3.0	4.3	Weaker
NFP	245	101	270	Neutral
Unempl Rate	6.2	6.0	5.5	Weaker
Core CPI MoM	0.2	0.2	0.2	Weaker
Core CPI YoY	1.9	2.7	2.3	Weaker
Core PCE MoM	0.1	0.2	0.2	Weaker
Core PCE YoY	1.5	2.0	1.9	Weaker
Retail Sales ex Auto MoM	0.3	0.4	0.6	Weaker
Conference Board	90	94	104	Weaker
IP MoM	0.4	0.3	0.4	Stronger
ISM	57.1	49.0	56.3	Stronger
ISM Order	63.0	51.4	61.1	Stronger
ISM Non-Manuf	57.0	52.4	57.1	Neutral
Philly Fed	23.2	5.5	24.3	Neutral
Chicago PMI	59.8	52.2	60.7	Neutral
Durable ex Trans MoM	0.7	0.4	0.9	Neutral
New Home Sales	429	793	962	Weaker
Existing Home Sales	5	6	6	Weaker
Housing Starts	1007	1480	1684	Weaker

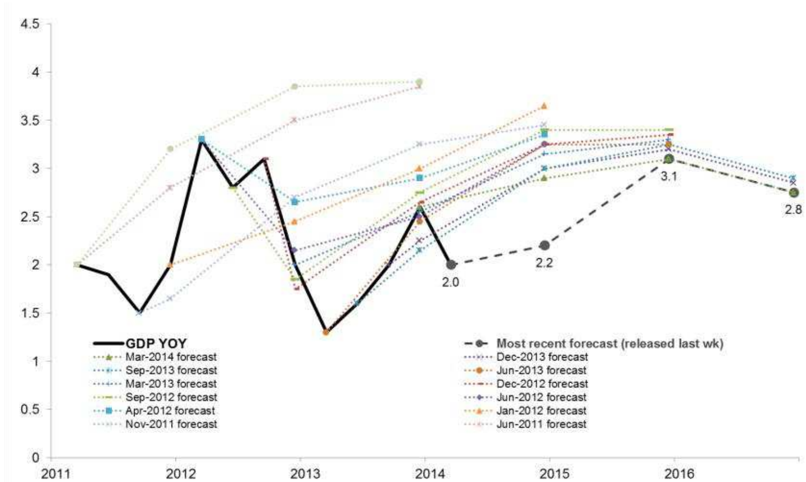
Source: BlackRock; Bloomberg; Goldman Sachs; JPM DataQuery

The OIS market is trading significantly through the median Fed dot, as both the Fed and the private sector have consistently overestimated growth…

Difference between 2Y forward OIS and constant maturity 2Y forward median dot

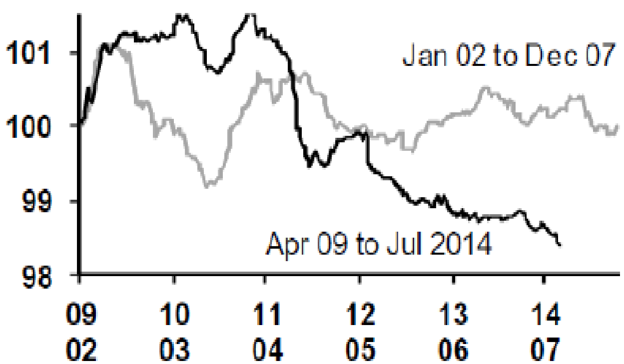


Fed has consistently overestimated GDP growth…



…as have private sector forecasters

Global GDP growth forecast revision index
(rolling 4 quarters: Q-1, Q, Q+1, Q+2)



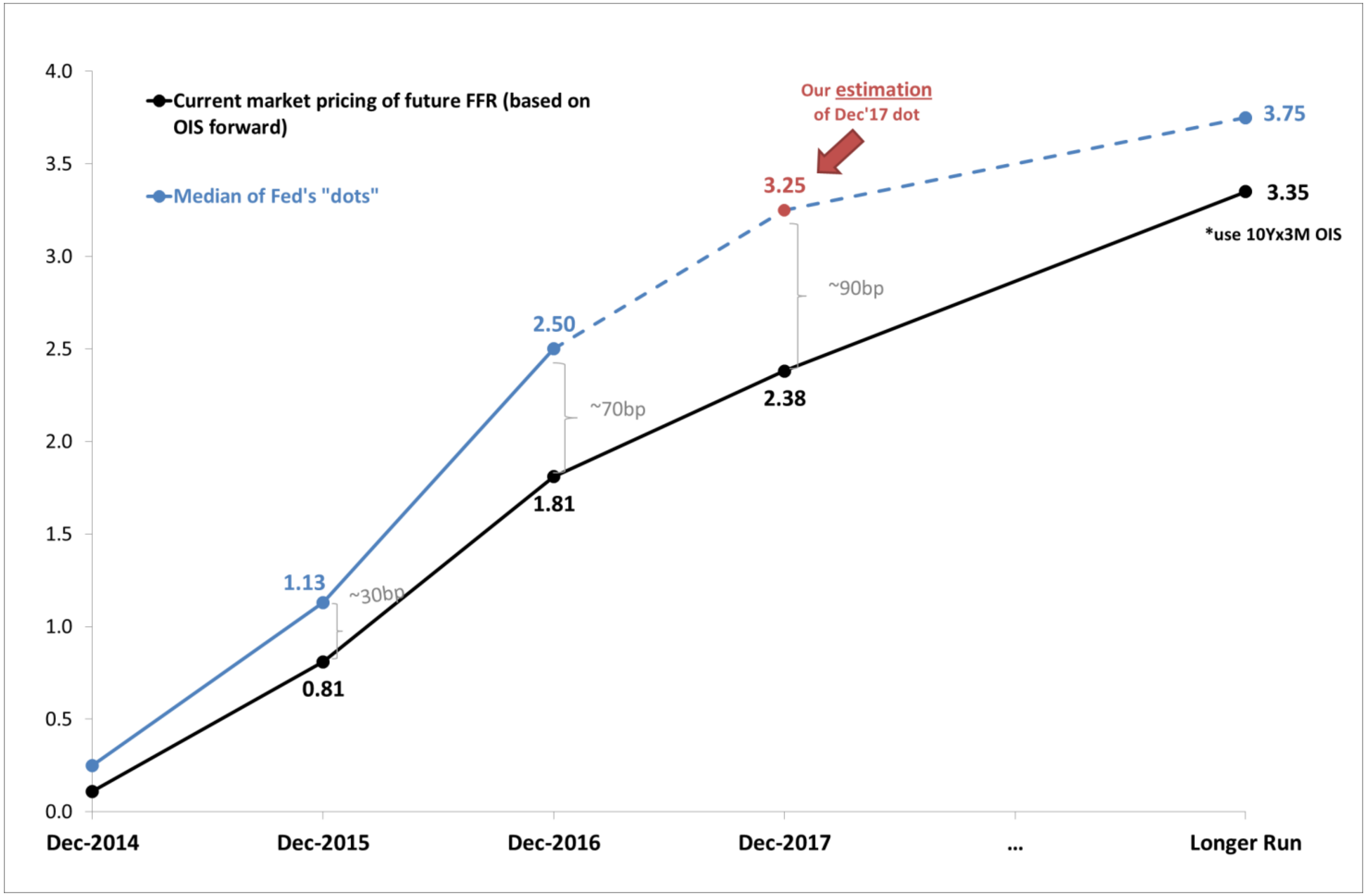
Source: J.P. Morgan; Index change reflects %-pt revision

JPMorgan's 3Q QoQ GDP forecast is 3.0% for US, 1.0% for Euro area, and 2.0% for Japan

Source: BlackRock; Federal Reserve Bank; JP Morgan; Bloomberg

…pretty much across the entire OIS curve

Fed Funds Rates Implied by OIS Forward and Fed's "Dots" Projection

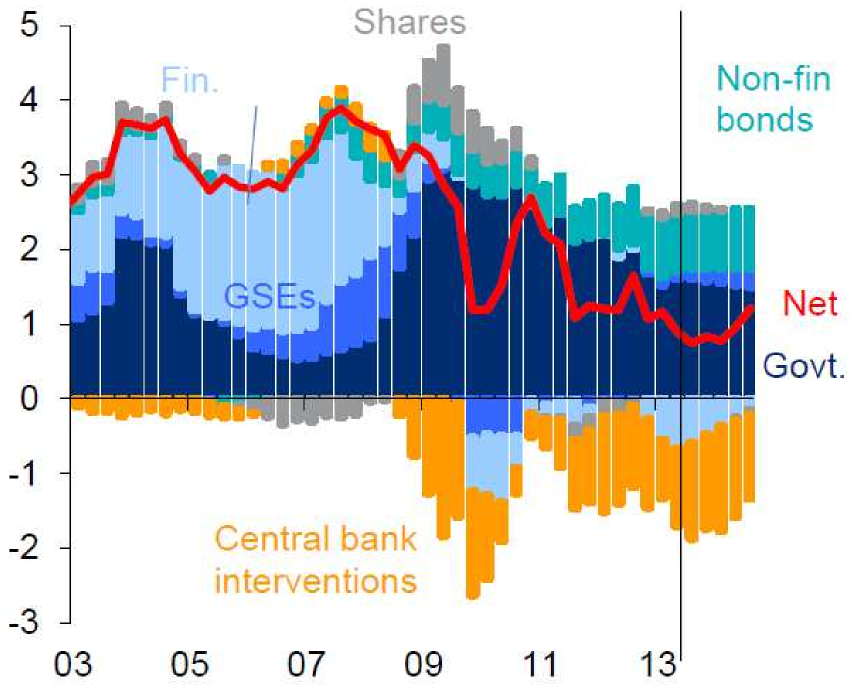


For illustrative purposes only. This is not intended to be a recommendation of any particular trading strategy or a prediction of future.

Source: BlackRock; Federal Reserve Bank; JPM DataQuery; Bloomberg

The net supply of financial product has been declining over the past few years due partly to central bank purchases, and it is difficult to find high yielding product…

Net Issuance of new securities *minus* central bank interventions (12-month rolling; trillion USD)



Yields and duration of various products

	Yield	Duration
US 2Y Tsy	0.52	2.0
US 10Y Tsy	2.41	8.8
German 2Y	-0.03	2.0
German 10Y	0.95	9.0
UK 2Y	0.70	1.4
UK 10Y	2.35	8.1
JULI (investment grade credit)	3.71	7.2
US High Yield	5.57	3.6
EMBI (EM external bond)	5.39	7.2
Current coupon 30Y MBS	3.12	7.0

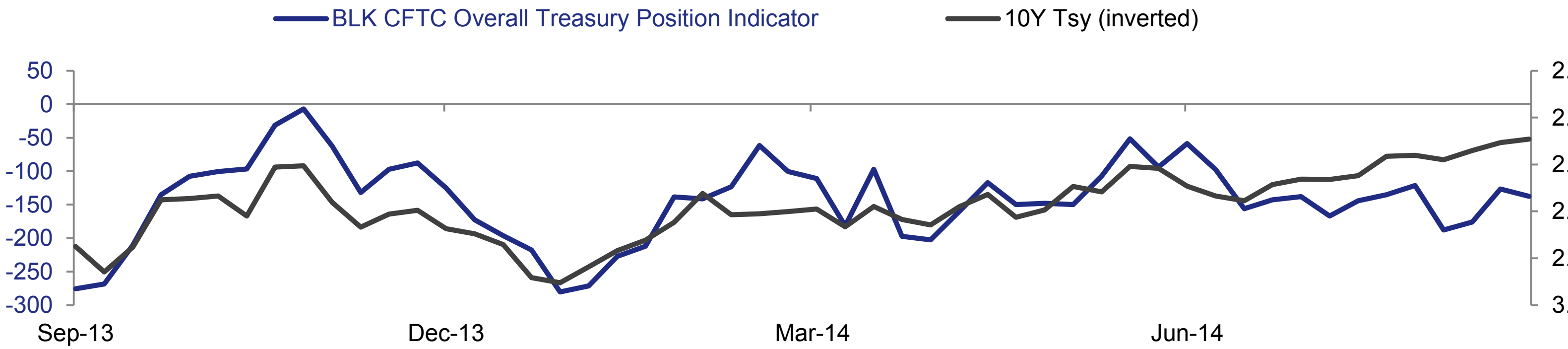
Note: index yield is shown for illustrative purposes only. It is not possible to invest directly in an index. Past performance is not indicative of future returns.

Source: BlackRock; Citi; JPM DataQuery

…while positioning remains short at the front-end, even as shorts in the belly of the curve have been partially washed out

BlackRock CFTC position indicator report as of Tuesday, 26 Aug 2014

	Net Long (000's contracts)				1Y Statistics							1M Chg in Yield vs. 1M Chg in Positioning		1M Chg in Positioning vs. Initial Positioning		Expected Yld Impact[2] (bp/month)
	Tuesday	1W Ago	1M Ago	3M Ago	Uncentered Z	Avg	Uncentered SD	Min	Max	Underlying	Tuesday Yield	Beta	R^2	Beta	R^2	
Overall[1]	-137	-126	-121	-59	-0.9	-143	157	-280	-7	10Y Tsy	2.39	-0.14	65%	-0.19	25%	-4
ED	-195	-187	-218	-121	-1.4	-78	135	-306	139	2Y Swap	0.72	-0.05	63%	-0.11	16%	-1
TU	-24	-4	-16	-3	-1.6	-5	15	-39	16	2Y Tsy	0.52	-0.28	59%	-0.23	30%	-1
FV	-49	-58	-54	-58	-0.6	-75	80	-141	-19	5Y Tsy	1.66	-0.40	63%	-0.16	18%	-3
TY	-34	-29	-43	-20	-0.6	-54	60	-121	-11	10Y Tsy	2.39	-0.39	68%	-0.21	29%	-3
US	-5	-3	12	20	-0.4	0	14	-29	20	30Y Tsy	3.15	-0.32	15%	-0.24	36%	0
WN	3	1	2	-1	0.4	-5	7	-12	3	30Y Tsy	3.15	-2.37	31%	-0.21	31%	1



CFTC presents long/short positioning data of Treasury futures, broken down into two separate categorizations. The first categorization includes dealer, asset managers, hedge funds, others and non-reportables. The second categorization includes non-commercials (specs), commercials and non-reportables. We use a weighted average of the net longs in each sub-category such that the weights maximize the correlation between monthly changes in net longs and monthly changes in swap or Tsy yields over the past 1Y. To avoid multicollinearity in the data we eliminate Others and Commercials from the optimization routine.

Footnote:

1. Overall indicator is sum of all six individual indicators in TY equivalent terms
2. Expected yield impact is the projected impact on yield if positioning reverts to zero over the long term. It is calculated as net long indicator* orange beta * blue beta and is expressed in bp of yield reversion per month

Source: BlackRock; CFTC

The 2Y part of the Treasury curve offers good risk-adjusted carry, but is likely to be negatively impacted as we approach Fed tightening

Risk-adjusted carry and slide for front-end hot-run Treasuries

	3M Carry	3M Slide	3M Carry + Slide	1Y SD of 1M chg in yield	Risk-adj Carry & Slide
1Y Tsy	0.00	0.06	0.06	0.02	2.9
2Y Tsy	0.09	0.11	0.20	0.07	3.3
3Y Tsy	0.10	0.12	0.22	0.13	2.0
5Y Tsy	0.10	0.06	0.16	0.17	1.1

Risk-adjusted carry for various yield and credit carry sources

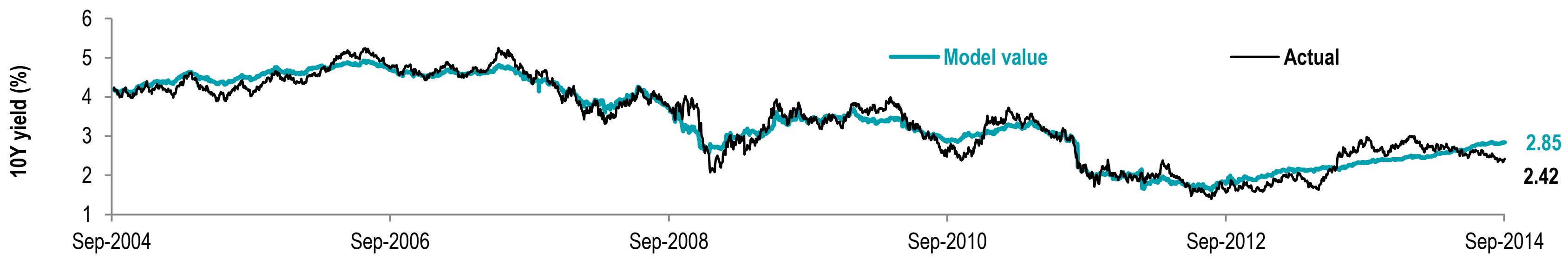
	Duration of Index (yrs)	1Y Carry[1] (bp of ntl)	Annualized Slide[2] (bp of ntl)	1Y Carry+Slide (bp of ntl)	Average Rating	PD over 1Y[3] (S&P)	Assumed LGD[4] (%)	Expected Annual Loss (bp of ntl)	Loss-adj 1Y Carry+Slide[5] (bp ot ntl)	Annualized 1M Risk[6] (bp of ntl)	Annualized Risk-Adj Carry+Slide[7]
Germany 2s/5s	-	28	95	123					123	228	0.54
UK 2s/5s	-	108	47	155					155	362	0.43
US 2s/5s	-	117	32	148					148	242	0.61
Japan 2s/5s	-	8	12	20					20	61	0.32
2y Spain vs Germany	-	30	13	43	BBB	0.21%	60%	13	30	192	0.16
2y Italy vs. Germany	-	42	25	67	BBB+	0.16%	60%	10	58	218	0.26
2y France vs. Germany	-	5	-1	4					4	29	0.14
2y Belgium vs. Germany	-	4	-2	2					2	45	0.05
MBS vs 5y Tsy	4.6	32							32	135	0.23
IG vs Tsy	7.2	132			A-	0.12%	60%	7	125	239	0.52
HY vs Tsy	3.6	434			B+	3.0%	80%	241	194	364	0.53
EM vs Tsy	6.7	304			BBB-	0.41%	60%	24	280	584	0.48

Note: 1M risk is defined as 1Y standard deviation of 1M change in loss-adj carry and slide

Source: BlackRock; JPM DataQuery

Although 10Y Treasuries appear to be trading at very rich levels from a low frequency perspective…

10Y Treasury yield: actual vs. model value



*Footnote: we use the following 6 variables in our low-frequency model for 10Y yield: 1Yx1M OIS rate, 10Y CPI swap yield, 1Y ahead blue chip growth expectations, weighted European peripheral spreads to Germany, expected QE 6M forward ($bn/month in 10Y equivalents), and Fed forward guidance (months).

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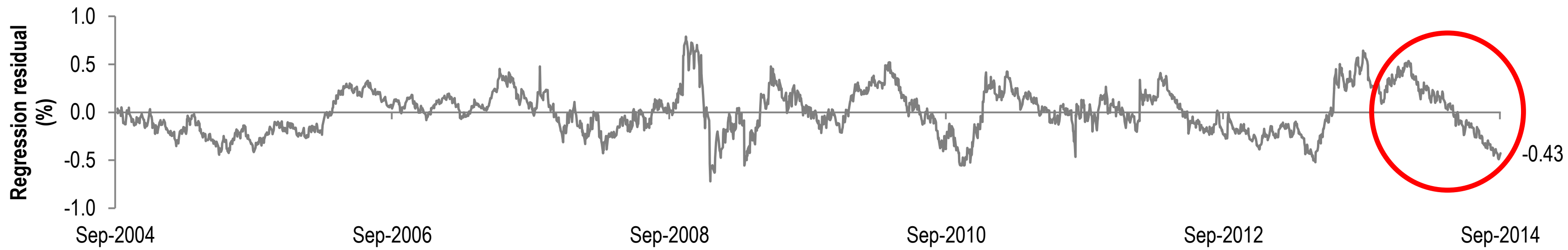
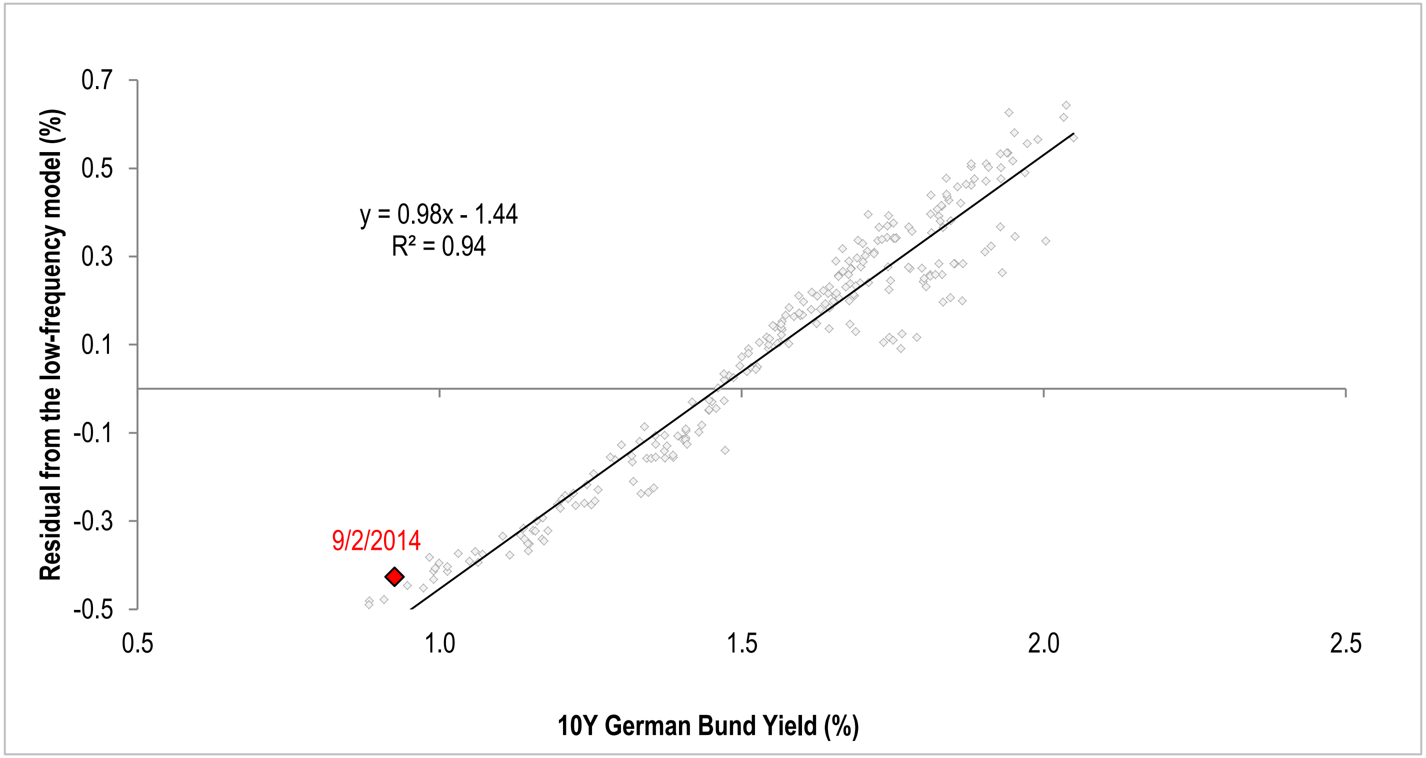
Residual of low-frequency 10Y Treasury yield model



Source: BlackRock; JPM Dataquery

…they appear to be more fairly priced when one takes into account the significant downward pressure on US yields stemming from the low level of Bund yields

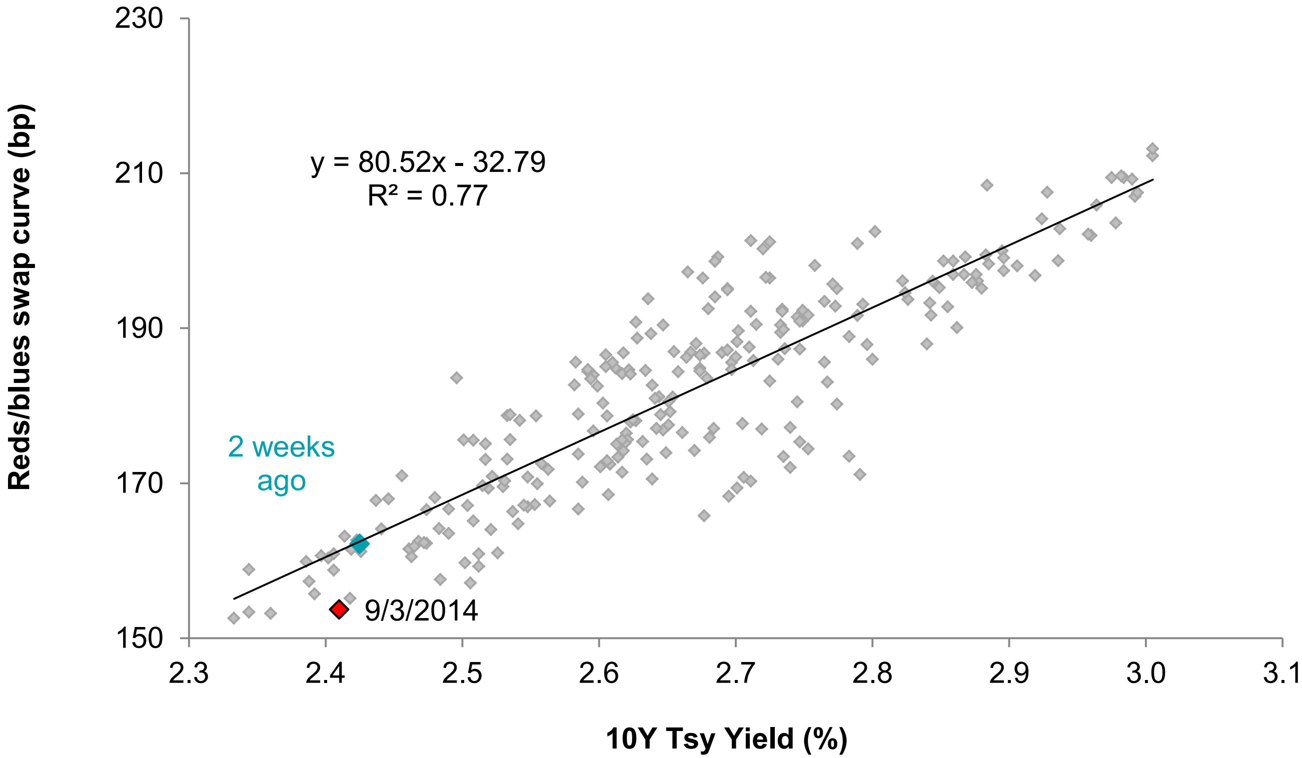
Residual from low frequency model regressed against 10Y German government bond yield
(past 1Y; %)



Source: BlackRock; JPM DataQuery

Instead of duration shorts in 10Y Treasuries, we recommend reds/blues steepeners which are well correlated with the 10Y sector and offer positive Carry + Slide

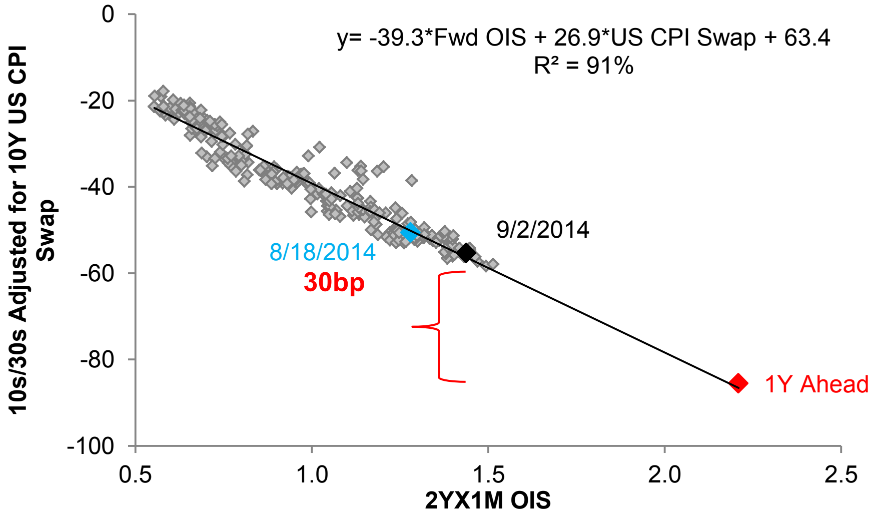
Reds/blues swap curve regressed against 10Y Treasury yield
(past 1Y)



Source: BlackRock; JPM DataQuery

We are positioned for continued flattening of the 10s/30s Treasury curve. Although this is a negative carry trade, the “measured carry” is actually positive

10s/30s Treasury curve regressed against 2Yx1M forward OIS and 10Y CPI swap rate (past 1Y; bp)



10s/30s Treasury curve flatteners; bp	
Current	75
1Y forward	55
1Y carry	-20

1Y estimates given Fed tightening regime; bp	
MTM P&L	30
"Measured" carry	10

As we approach Fed tightening, carry may not be an appropriate metric to measure the attractiveness of a trade. Instead, we need to explicitly account for the impact of Fed tightening expectations on trade P&L, and propose a new metric called “measured carry” that takes this into account. For example, here we are assuming that market expectations of Fed tightening are realized over the next year.

Footnote:

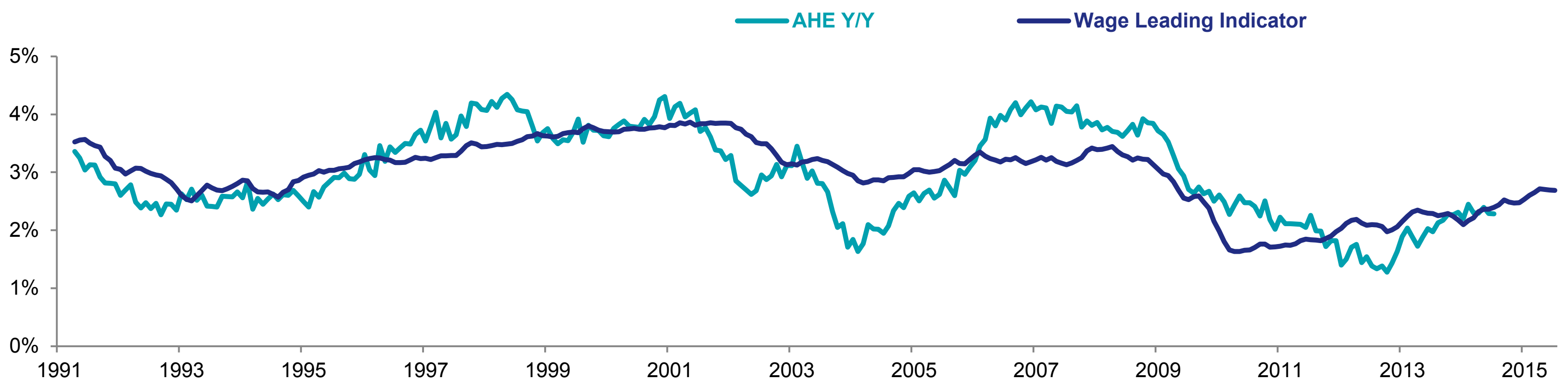
* We arrive at measured carry as follows: The current 2Yx1M and 3Yx1M OIS (Overnight Index Swap) rates are 1.44% and 2.21%. Assuming that Fed expectations are unchanged, the 2Yx1M rate 1Y from now will be 2.25%, or an increase of 80bp from current levels. This will put around 0.36 * 80 = 30bp of flattening pressure on the 10s/30s Treasury curve. This compares favorably to the 21bp/year of negative carry embedded in the swap curve and suggests that the measured carry in a 10s/30s flattener is 30bp – 20bp = 10bp over the next year. The current and forward Treasury curve is from JPMorgan’s Dataquery. The MTM P&L in the table above is from the chart to the left.

For illustrative purposes only. This is not intended to be a recommendation of any particular trading strategy or a prediction of future.

Source: BlackRock; JPM DataQuery

Our index of wage leading indicators implies modest wage acceleration going forward, suggesting long TIPS breakevens is worth considering

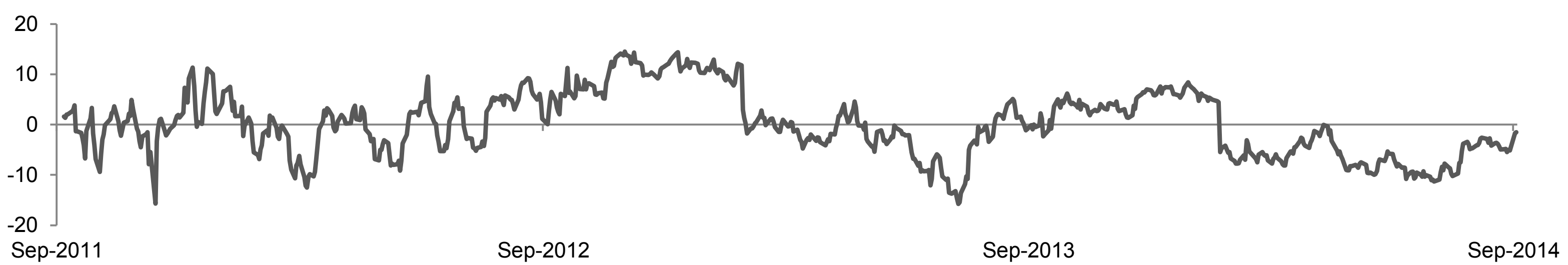
Wage Leading Indicator (WLI) suggests modest wage acceleration going forward…



Footnote: to construct the Wage Leading Indicator, we look at five indices: Bloomberg US weekly Personal Finance Index, Conference Board Income index, NFIB compensation plans, NFIB compensation index, and University of Michigan expected household income change for next year. WLI is the PCA-weighted average of the Z-score of these five indices.

…even as increasing cost of shelter is likely to eventually pressure breakevens higher
10Y TIPS breakevens are trading fair to 5Y breakevens

Residual from regressing 10Y TIPS breakeven against 5Y breakeven (past 3 years; bp)

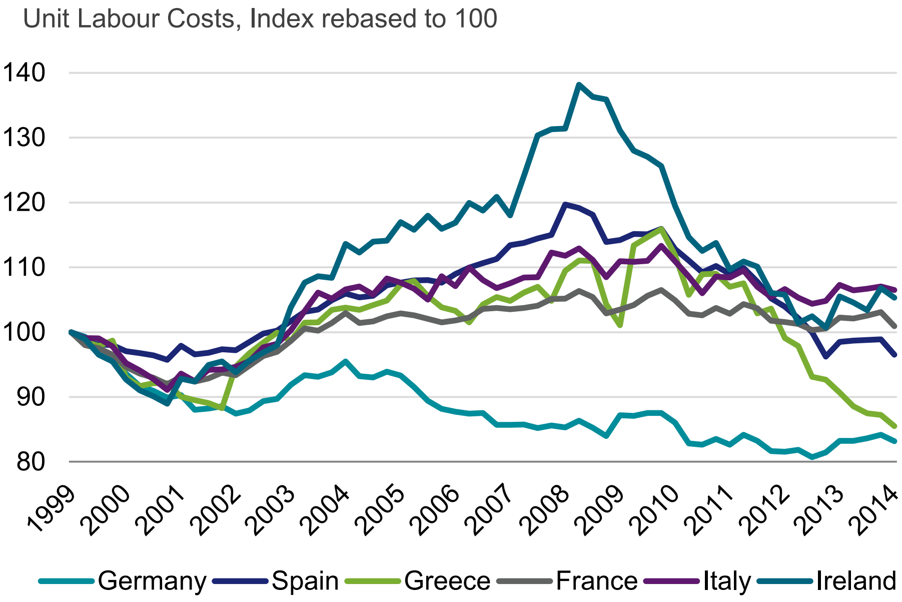


Source: BlackRock; Bloomberg; JPMorgan Dataquery

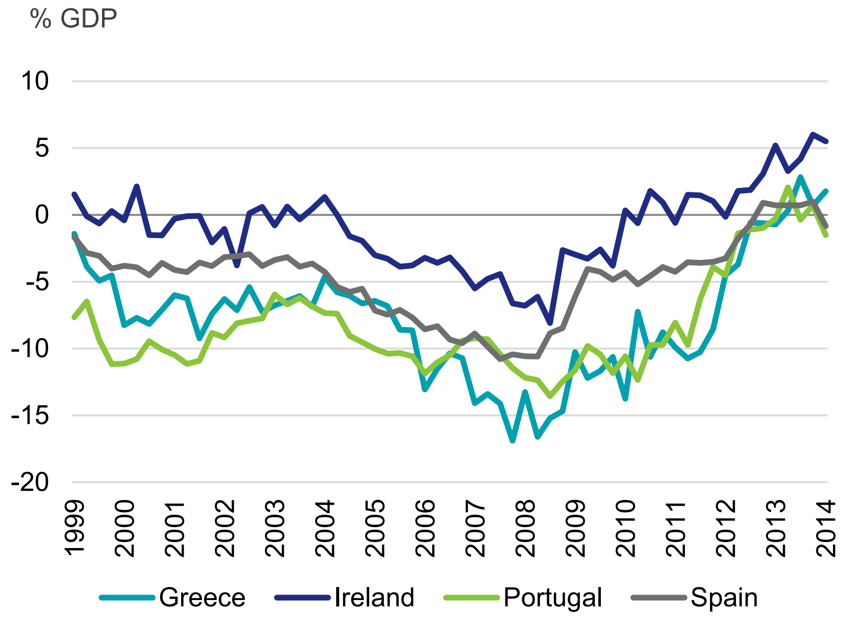
<u>Europe</u>: Peripheral economies are regaining lost competitiveness and current account deficits have disappeared

- Greek unit labour costs have fallen by 30% vs Germany since crisis
- Ireland & Spain have closed half of the gap that widened over 2000s
- In most cases (Spain, Ireland, Portugal) this is largely due to better exports, not just weaker imports from recession

Eurozone Competitiveness



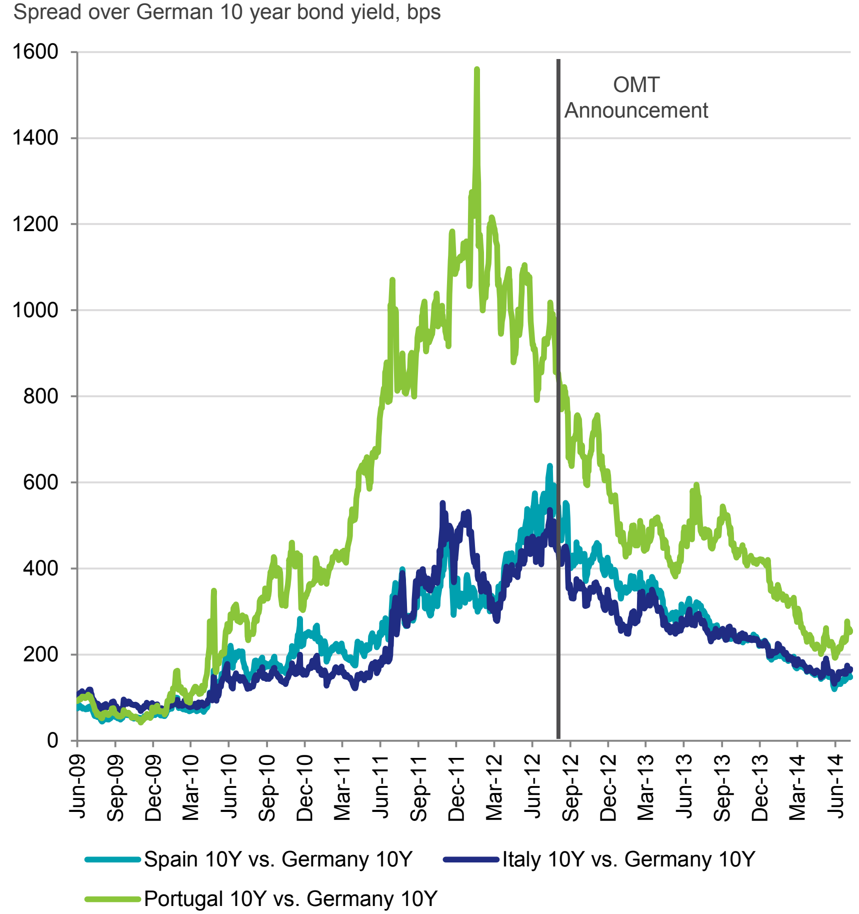
Current Account Balances



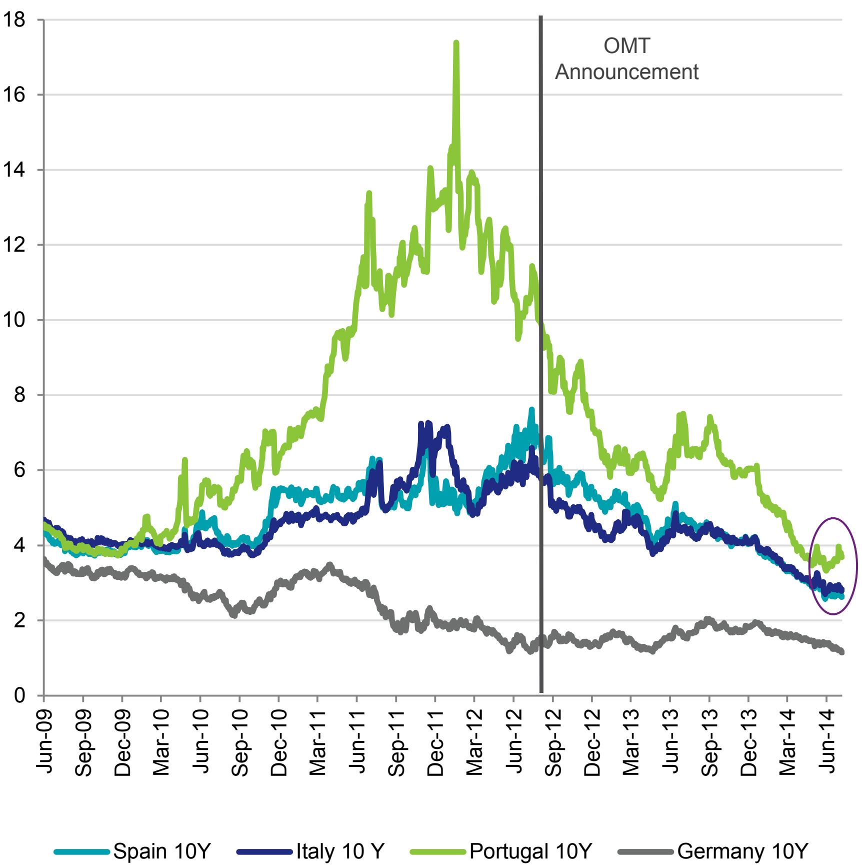
Source: Thomson Reuters Datastream, Markit, ONS, BlackRock, as of July 2014

Eurozone periphery bond yields are now close to their pre-crisis levels, and are likely to benefit even more from enhanced liquidity from ECB ABS/CB QE

Eurozone Periphery Government Bond Spreads



Eurozone Periphery Government Bond Yields

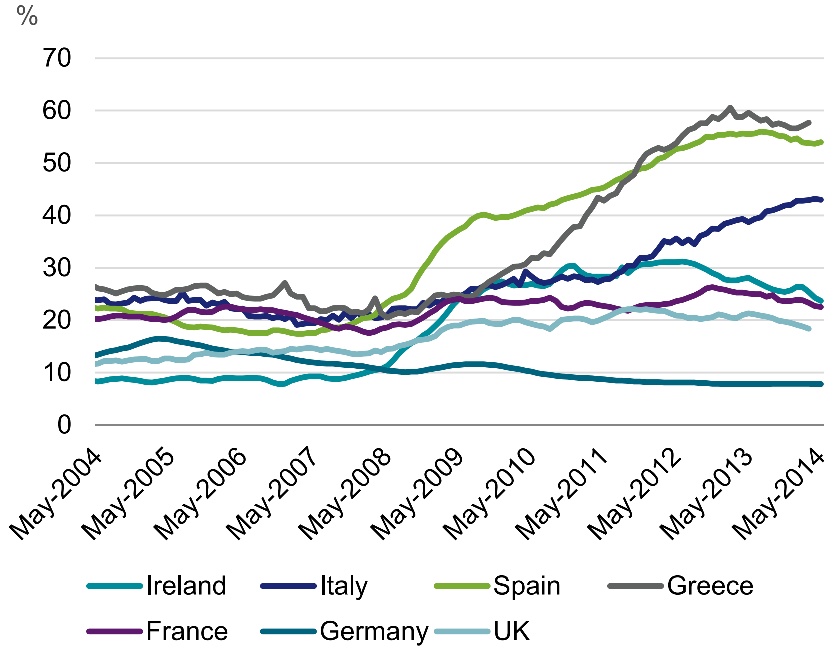


Source: BlackRock; Bloomberg, as of July 2014

But the crisis is *far* from over: Four main structural challenges remain…

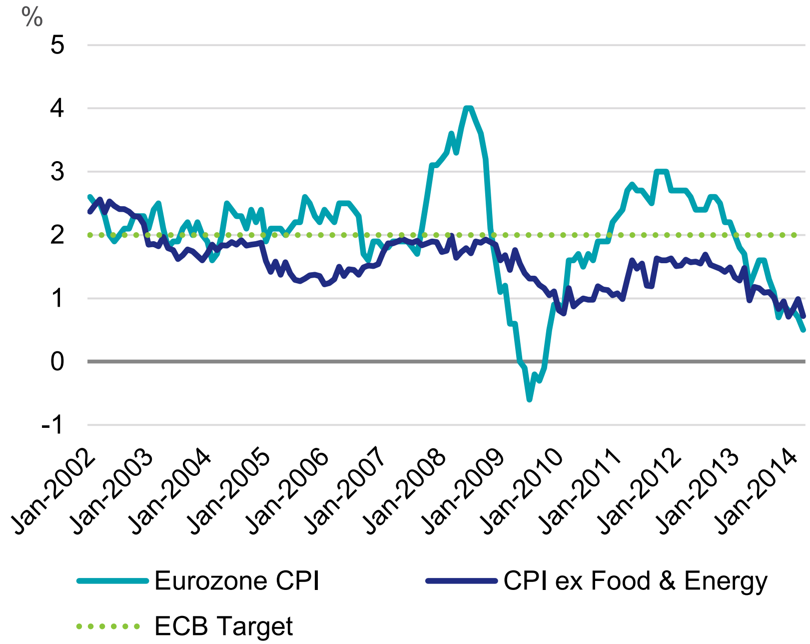
(1) Unemployment is too high—will growth be strong enough to reverse this?

European youth unemployment rate



(2) Inflation is too low and falling—if this continues the ECB may need to undertake more aggressive measures

Disinflation will keep pressure on the ECB



Source: Thomson Reuters Datastream, Eurostat, BlackRock, as of 16 July 2014

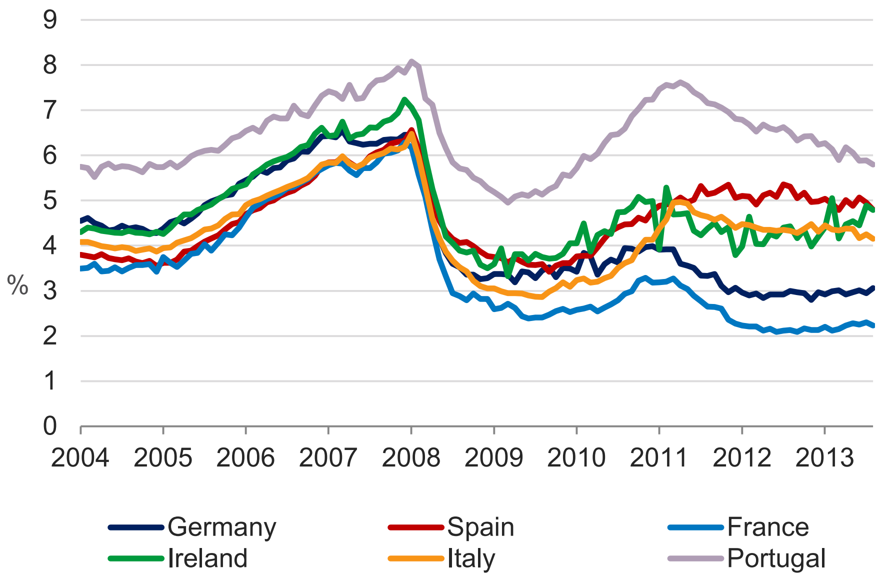
…structural challenges (continued)

(3) Financial fragmentation: corporate lending rates still scattered

(4) ….and the core countries face their own problems

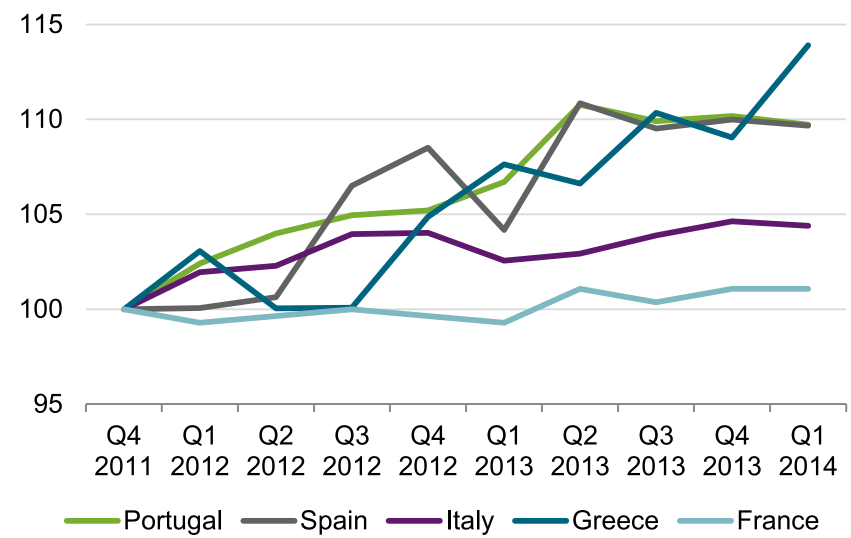
Eurozone Corporate Lending Rates

Loans to non-financial corporations up to 1 Million Euros



France and Periphery Export Performance

Export/GDP, Q4 2011=100



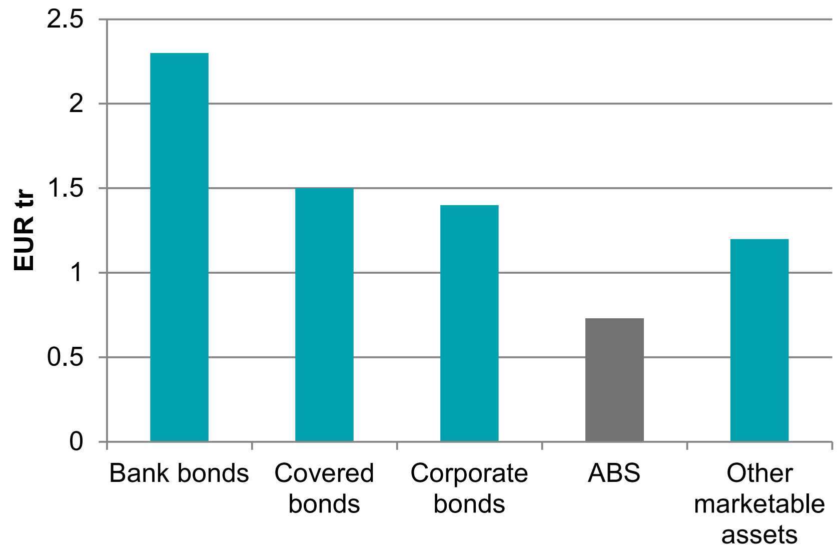
- Unlike periphery, France has done little to address competitiveness challenges
- And its economy remains overly skewed towards public sector

Source: Thomson Reuters Datastream, Markit, ONS, BlackRock, as of July 2014

The €500bn ECB ABS purchase program expected over 3 years is going to be hard to implement due to the small size of the overall market*

- There is not a large "free float" of ABS, and secondary trading is limited
- Practical difficulties, including the fact that securitisation is not evenly used across the Eurozone countries
- Danger of crowding out the existing private buyer base

ECB Eligible non-government collateral



Size of the outstanding Euro zone market; €bn

	Eligible marketable assets (€ billion)	Use of collateral (€ billion)	Difference (€ billion)
Central government securities	6,579	329	6,250
Regional government securities	434	97	337
Uncovered bank bonds	2,239	229	2,010
Covered bank bonds	1,489	361	1,128
Coporate bonds	1,413	98	1,315
ABS	684	301	383
Other marketable assets	1,215	113	1,102
Total	14,053	1,527	12,526

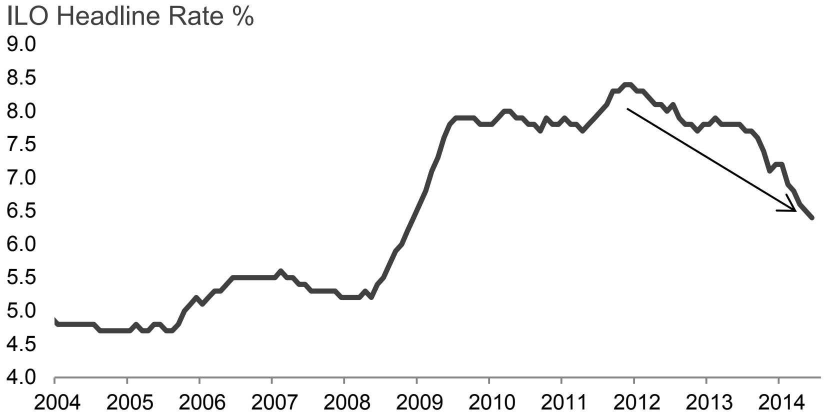
Source: ECB website: http://www.ecb.europa.eu/paym/pdf/collateral/collateral_data.pdf?7c8c09d0b0b721491b532acc06d681ae

* At the Sept 2014 ECB press conference, Draghi stated that details of the program will be announced at the Oct ECB meeting. Both newly-issued and currently outstanding ABS (including RMBS) + covered bonds would be purchased. The €500bn number was reported by Reuters and is not an official number.

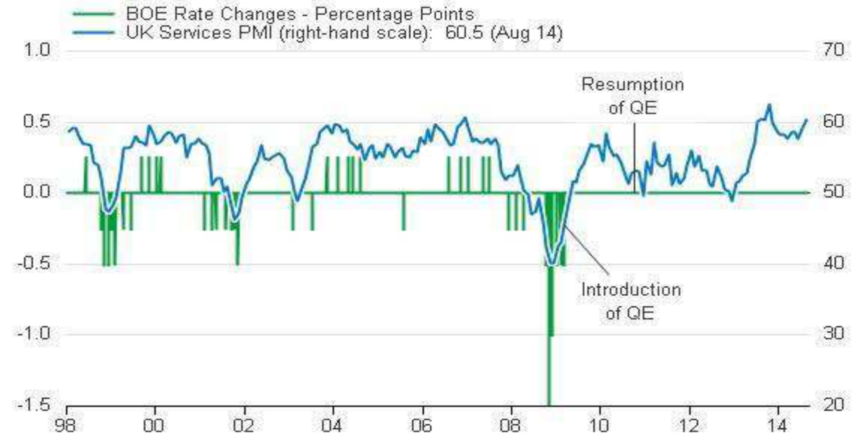
Source: BlackRock; JPM; ECB

UK – strong economic indicators are calling for a rate hike. Wage growth is the only box un-ticked and Carney has been flip-flopping on policy

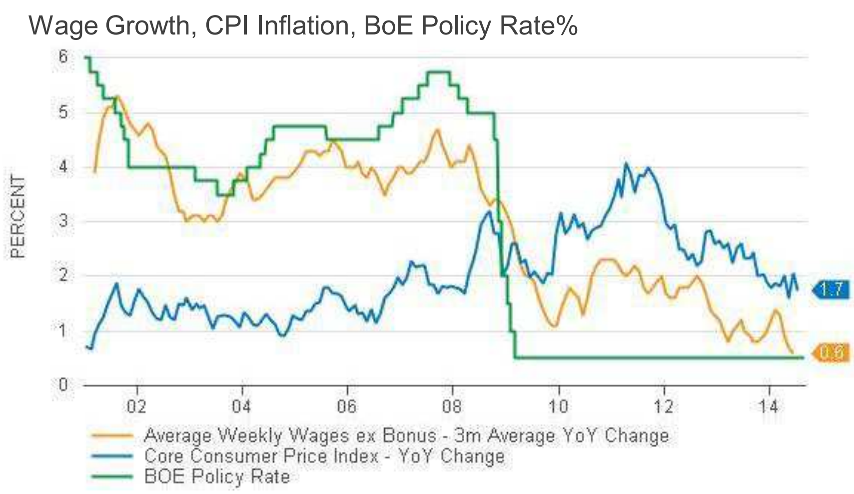
Unemployment rate dropping



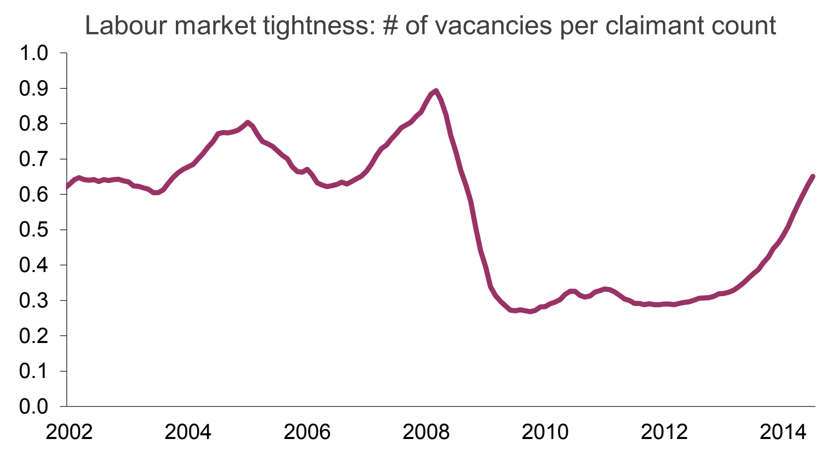
Exceptionally strong PMI



Wage growth has been less impressive…



…but this is against the backdrop of strength in almost every other labour market indicator



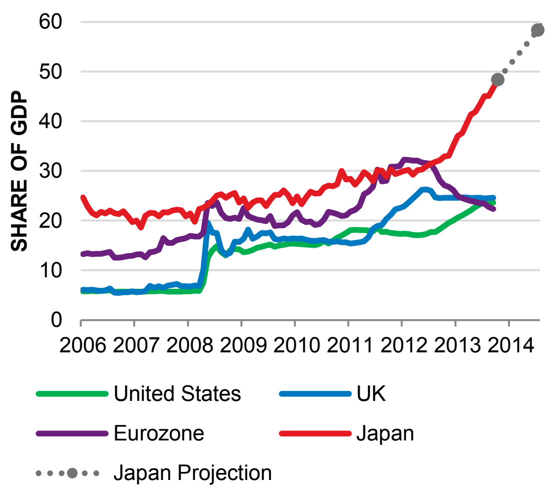
Source: Thomson Reuters Datastream, Markit, ONS, BlackRock

Japan: Abe's three arrows

#1 Monetary Expansion

- BoJ is aggressively expanding its balance sheet
- BoJ balance sheet is set to reach 58% of GDP by the end of 2014

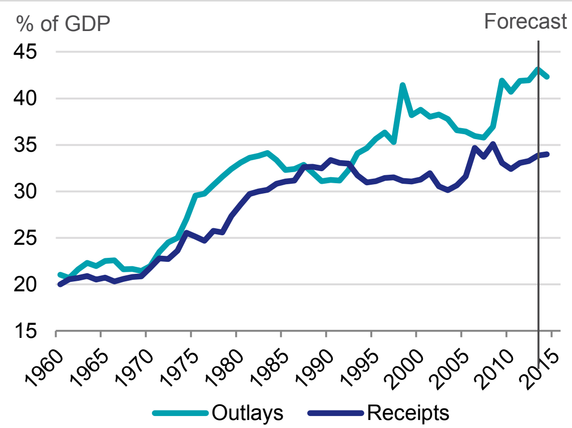
Central Bank Balance Sheets



#2 Fiscal Consolidation

- Japan's gross debt-to-GDP ratio stands at 243% - the highest in the G7.
- Raising consumption tax from 5% to 8% in April, and again to 10% in Oct 2015, to broaden tax base
- Spending cuts will be needed too

Japan Government Spending and Receipts



#3 Structural reforms

Ultimately, the 3rd arrow will be key to raising Japan's potential growth rate and fiscal sustainability

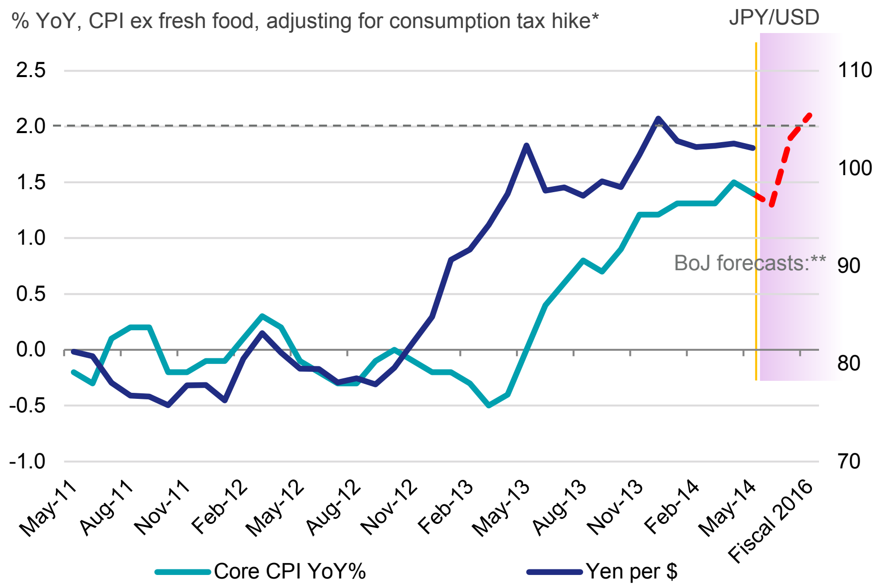
Key priorities for 2014

- Trans-Pacific Partnership Ratification
- National strategic areas(March)
- Foreign workers (March)
- Corporate tax reform (June)
- Wage increase expected (March)
- GPIF reform
- Re-launch of nuclear power plats if safety can be confirmed

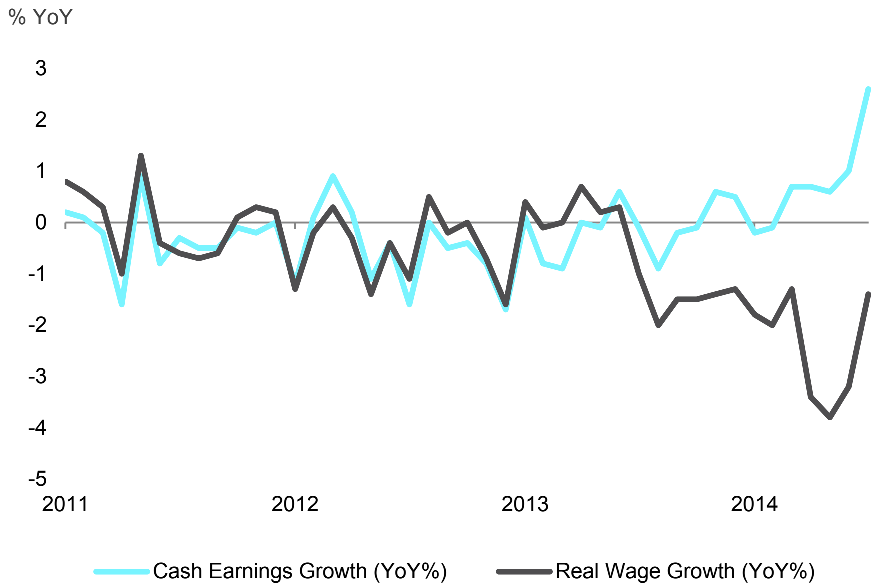
Source: BlackRock Investment Institute, Central Banks, Industrial Competitiveness Council, OECD forecast as of March 2014

Wage growth is key to achieving the BoJ's 2% inflation target

Weaker yen helps spurring inflation



Real wage growth is still negative



- BoJ's confidence lies in their judgment that Japan's output gap is zero - so any rise in demand should spur inflation.
- A weaker yen could help - yet the broader economic impact is limited as exporters have shifted manufacturing overseas.

- Wage growth is key to rekindling demand and inflation. Recent salary hikes by big companies such as Toyota (and labour shortages in construction) are encouraging.
- The key question? Will small- and medium-sized enterprises (which provide 70% of jobs) follow? This could take time.

Footnote:
*The Consumer Tax in Japan was raised to 8% in Apr. 2014 from 5%, affecting CPI numbers released after April 2014
**BoJ majority median forecasts: 2014 1.3%, 2015 1.9% , 2016 2.1%

Source: Bank of Japan, Japan Ministry of Health, Labor and Welfare and Statistics Bureau, BlackRock

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Credit Research and Case Study

DOUGLAS OARE, MANAGING DIRECTOR

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- Dedicated investment grade, high yield, and distressed credit analysts enables focused expertise
- Organized geographically and by industry to drive deep knowledge of industry factors locally
- Partnering with sector specialists to generate investment ideas

2. Leverage BlackRock's global research relationships across asset classes

- Achieve greater understanding of global industry and company dynamics through partnership with equity counterparts

Global Credit Research Platform
Approximately 40 analysts with an average of over 10 years investment experience

Americas Credit Research	European Credit Research	Asia Credit Research
Sarah Thompson • Doug Oare • Rob Wartell *Team Leaders* 22 Research Professionals	**Stefano Donati** *Team Leader* 10 Research Professionals	**Sumit Bhandari** *Team Leader* 6 Research Professionals

Credit Sector Specialists
Partner with credit research to generate investment ideas and execute transactions

Global Equity Platform
Approximately 170 professionals

US	Europe	Asia

Large Cap • Mid Cap • Small Cap

Growth • Value

Sector Focus • Regional Focus

A persistent focus on investment idea generation drives results

Note: Number of research analysts as of 30 June 2014 and may include portfolio managers where there is material overlap

Credit research process

Analytical Review
Assess company & industry within Credit Analysis Framework

Formulate conviction views
Partner with sector specialist to evaluate & identify best investment opportunities

Set conviction & expected outcome
Establish level of conviction and catalysts for strategy to be successful

Ongoing evaluation
Constant monitoring of positions and catalysts that change investment thesis

1. Rigorous investment research process is designed to develop conviction views

- Assess relative value within and across sectors
- Formalizes daily interactions among research, sector specialist, and portfolio managers
- Creates basis for evaluation, monitoring, and risk oversight of investment opportunities
- Process is formalized through the creation of recommendation and high conviction trade ideas lists

Recommended Views – Executing best investment ideas

Establish top fundamental viewpoints…

…consider valuations to form tactical / strategic views…

…and develop rationale for conviction and outcome

ISSUER INFO								SPREADS			RECOMMENDATIONS	RATIONALE	EQUITIES	
[illegible]	[illegible]	MDY	S&P	Sector	Fundamental View	Credit Direction	4/30/2014 G Spread at R	Chg in Spread	Prior Month (3/31/14)	Strategic View	Rationale	1m Equity % Chg	6m Equity % Chg
[illegible]	[illegible]	A3	A-	Communications & Entertainment	Very Strong	Improving	69	-5	74	Overweight	Strongest fundamental story in the sector. Has recovered TWC related widening with announced all equity acquisition and should close in on DIS levels. Focus on 30yr exposure which has lagged relative to other single-A names, while 10yr appears more fully valued.	3.0%	8.0%
[illegible]	[illegible]	A2	A	Communications & Entertainment	Mixed	Stable	59	-5	64	Underweight	Inexplicably strong capital structure with mixed fundamental story, consistently trades very rich for what it is, see no reason to own.	-1.8%	14.1%
[illegible]	[illegible]	Baa1	BBB+	Communications & Entertainment	Very Strong	Stable	120	-2	122	Strong Over	Very strong fundamental story with temporarily elevated leverage. Meaningful spread upside over next 1-2 years as expect compression towards small discount to CMCSA levels ultimately. Big event risk behind it.	-1.7%	-8.5%
[illegible]	[illegible]	A3	A-	Communications & Entertainment	Mixed	Uncertain	101	-13	114	Underweight	Mixed fundamental story. Material negative event risk from AT&T potential over near term that should result in spread widening.	1.9%	-17.4%
[illegible]	[illegible]	A3	A-	Communications & Entertainment	Weak	Deteriorating	112	-5	117	Strong Under	Weak operator in a good business with near term material event risk related to VOD that should result in spread widening. Increasing competitive pressures are a potential further downside catalyst.	1.0%	-2.3%

For Illustrative Purposes Only

Fundamental credit analysis framework

1. Credit research team develops fundamental credit view through a rigorous assessment of industries, competitive positioning, management quality, and financial position

- Non-mechanical framework combines quantitative assessment of corporate capital structures with qualitative perspective on management and industry positioning

Fundamental Analysis

Industry Assessment
- Macro economic view
- Market demand & growth potential

Competitive Position
- Operating performance & event risk
- Revenue/cashflow diversification

Management Quality
- Experience and depth of resources
- Operating track record

Financial Position
- Ability to pay obligations
- Access to capital markets
- Liquidity and refinancing needs
- Event risk
- Investor confidence

Analysis Considerations

Key Investment Factors

Desired characteristics
- Strong management team
- Pricing power and ability to maintain/expand margins
- Free cash flow to reduce debt
- Covenants and prudent capital structure
- Catalyst to reduce credit risk

Characteristics to avoid
- Volatility of revenues/cash flows
  - Seasonal, project-oriented or start-up ventures
- Poorly defined downside risks
  - Litigation, environment & regulatory issues
- Weak or shareholder-friendly management teams
- Industries at a competitive disadvantage

BlackRock Credit View

Significant market presence facilitates analysis
- One-on-one company meetings
- Relationships with industry consultants and outside legal counsel
- Favorably impact new issue pricing and covenants with underwriters
- Source transactions on favorable terms

For illustrative purposes only

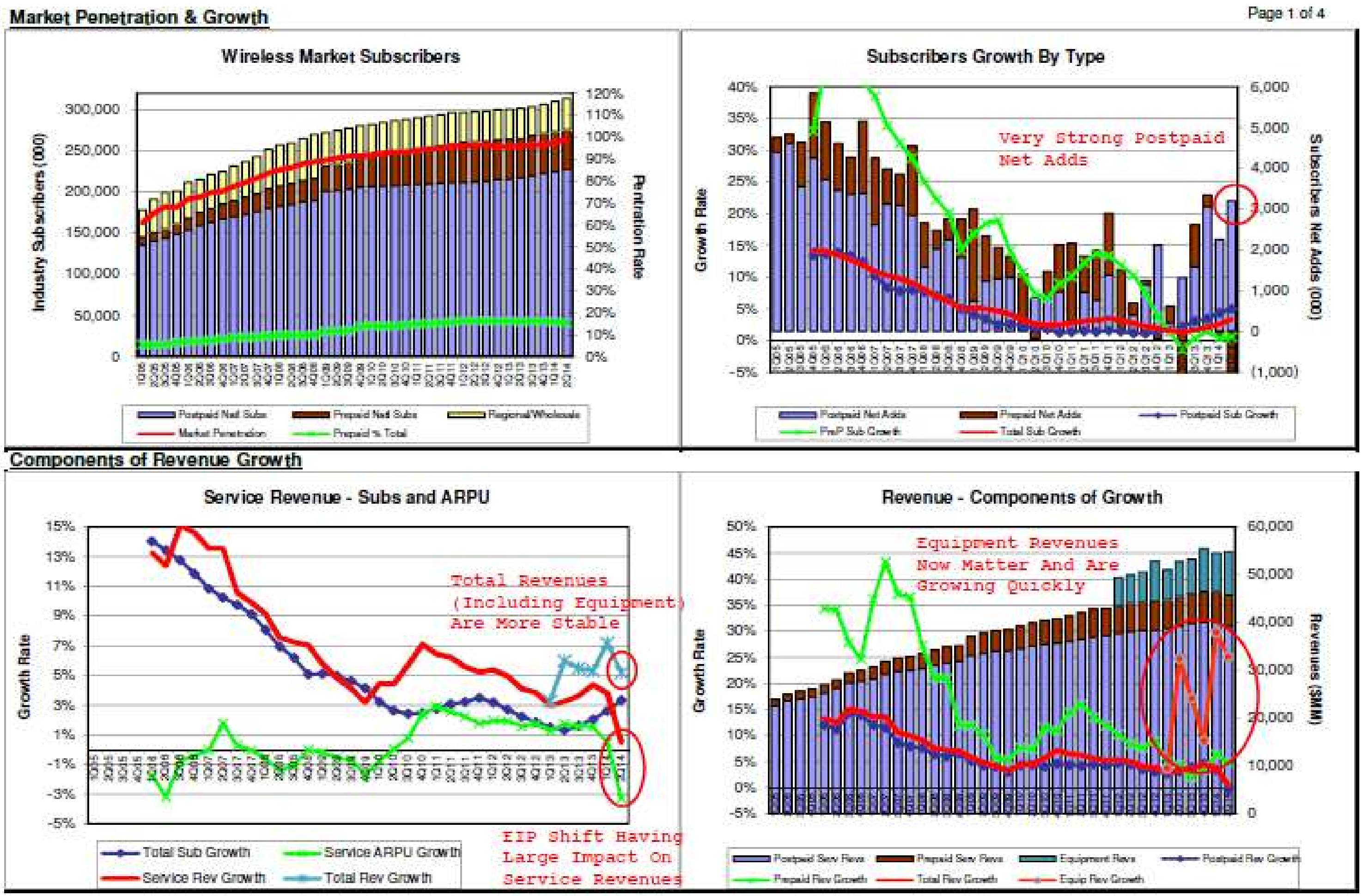
Case Study

US Wireless Industry and Verizon Communications

Wireless industry – macro trends

Overall healthy maturing market with competitive flare up boosting subscriber additions

Installment plans clouding traditional metrics, boosting equipment revenues at expense of service



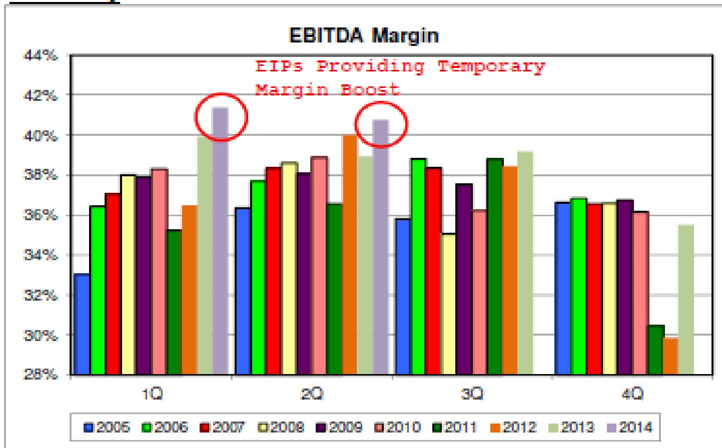
Wireless industry – macro trends

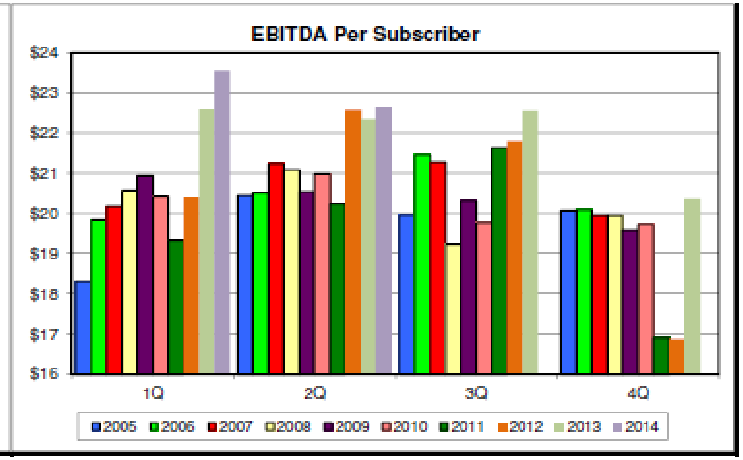
Profitability remains very strong (though getting a boost from installment plan accounting)

FCF strong despite a modest increase in capital intensity

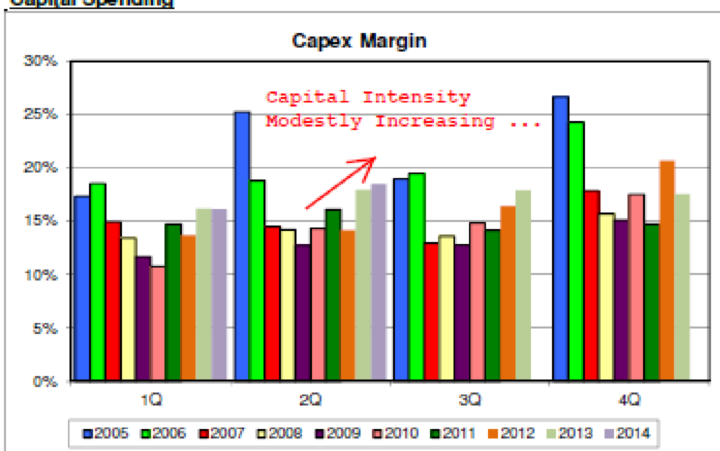
Page 3 of 4

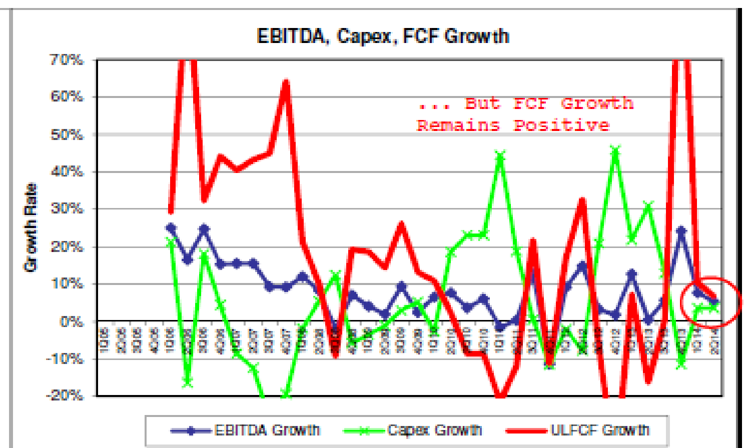
Profitability





Capital Spending

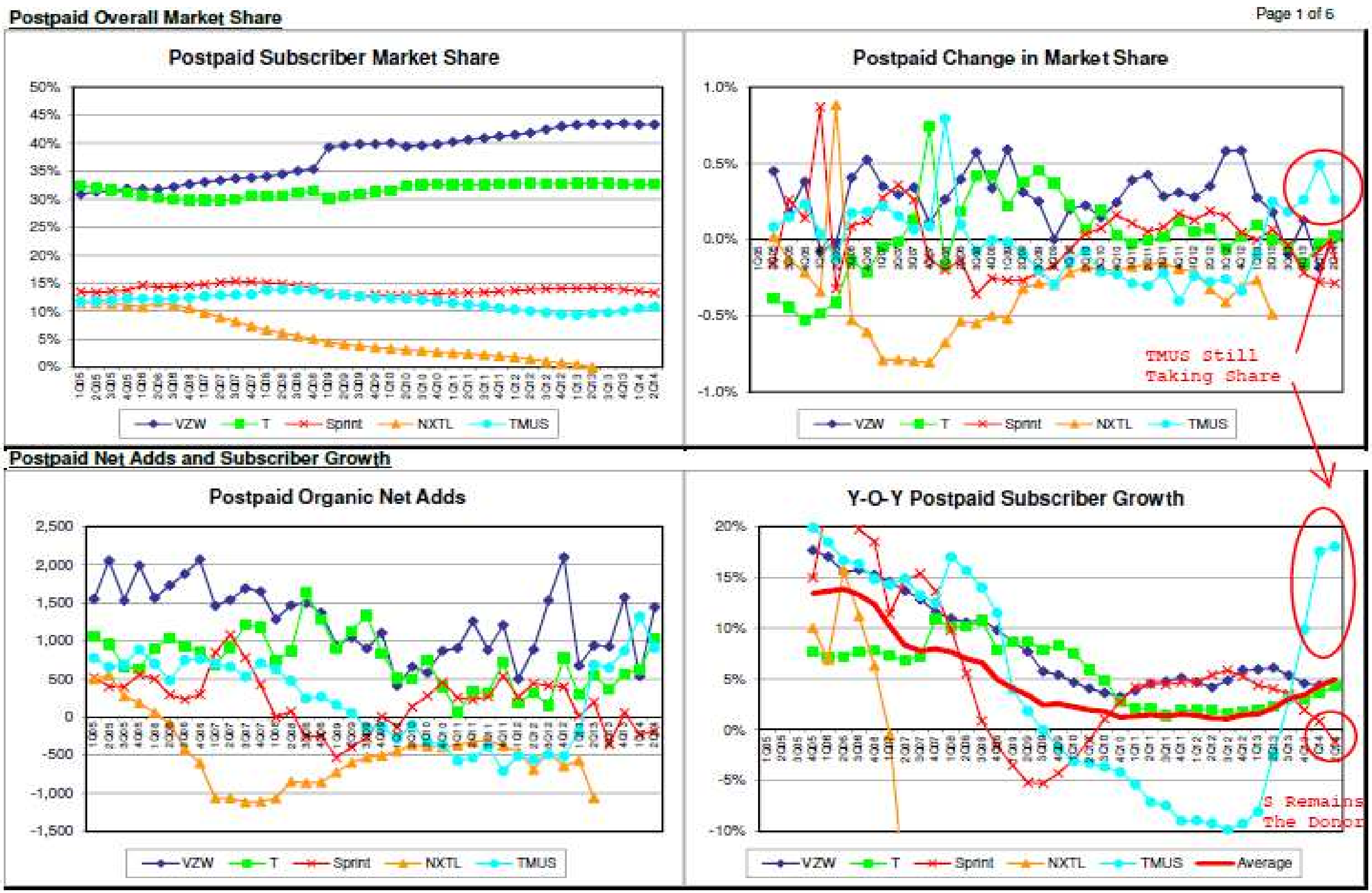




Wireless industry – micro trends

Industry wealth is not evenly shared – VZ/T are dominant with substantial scale advantages

TMUS resurgence has largely been taking share from S, less so from VZ/T



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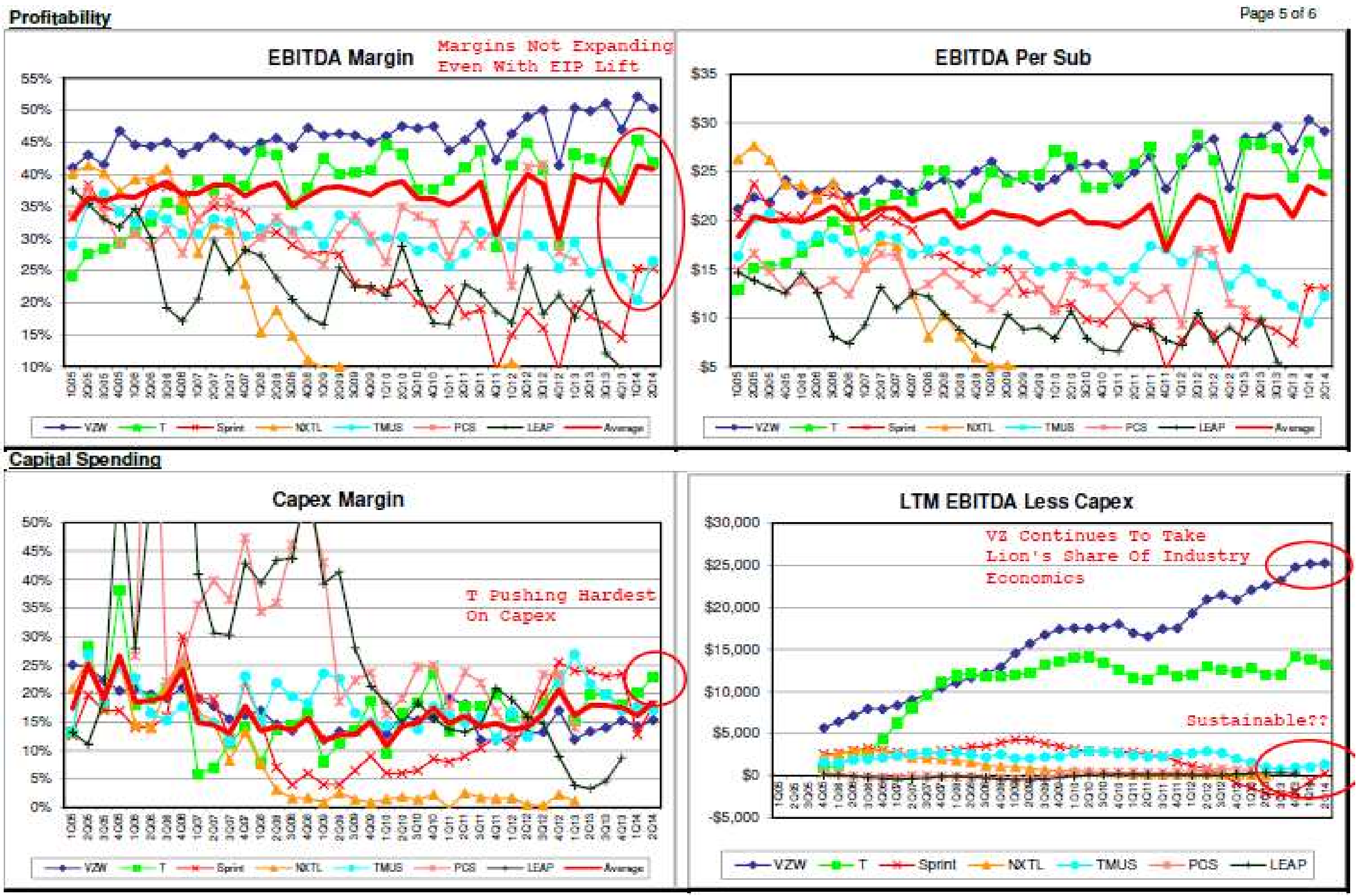
Wireless industry – micro trends

VZ/T generate all of the industry unlevered free cash flow

Sustainability of challengers remains uncertain given scale disadvantage



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Verizon Communications analysis

VZ analysis looks at future operating projections, asset values, liquidity, capital structure, etc.

Verizon Communications Inc.
Summary Financial Statistics (Dollars in Millions)

	Historical Year Ending 12/31/08	12/31/09	12/31/10	12/31/11	12/31/12	12/31/13	LTM 6/30/14	Proj. FYE 12/31/14	12/31/15	12/31/16
Total Revenues	97,354	107,808	106,565	110,875	115,846	120,550	123,645	126,460	130,072	133,050
Reported EBITDA	17,222	32,512	31,050	29,376	29,620	48,574	50,671			
Special (Gains)/Losses	15,350	(123)	3,326	5,954	7,846	(6,510)	(6,980)			
EBITDA (X-Items)	32,572	32,389	34,376	35,330	37,466	42,064	43,691	44,478	46,614	47,682
1/3 Lease Exp. Addback	612	839	833	833	833	867	867	867	867	867
Adj. EBITDA	33,184	33,228	35,209	36,163	38,299	42,931	44,558	45,345	47,481	48,549
Cash Taxes	1,206	158	430	762	351	422	422	***6,478***	***8,420***	***8,835***
Consolidated Net Income	3,962	11,601	10,217	10,198	10,557	8,128	8,385	***17,128***	***16,442***	***17,203***
Diluted EPS	$2.54	$2.26	$2.21	$2.15	$2.31	$2.84	$2.02	***$3.55***	***$3.86***	***$4.04***
Gross Interest Expense	2,566	4,029	3,487	2,827	2,571	2,667	3,994	4,577	4,842	4,637
1/3 Lease Exp. + P/S Divs	612	839	833	833	833	867	867	867	867	867
Total Fixed Charges	3,178	4,868	4,320	3,660	3,404	3,534	4,861	5,443	5,708	5,504
Senior Debt	51,952	62,256	52,794	55,152	51,987	93,591	109,979			
Cash Equivalents	(9,782)	(2,009)	(6,668)	(13,362)	(3,093)	(53,528)	(5,776)			
Net Debt	42,170	60,247	46,126	41,790	48,894	40,063	104,203	99,203	97,503	90,103
NPV of Leases	5,640	8,806	9,020	9,021	8,792	9,240	9,240	9,240	9,240	9,240
Adjusted Net Debt	47,810	69,053	55,146	50,811	57,686	49,303	113,443	108,443	106,743	99,343
Equity + Minority Int.	78,905	84,367	86,912	85,908	85,533	95,416	16,012	24,244	31,619	39,578
Adj. Net Capital.	126,715	153,420	142,058	136,719	143,219	144,719	129,455	132,687	138,363	138,921
Pension Deficit	2,603	3,226	3,403	6,472	8,491	5,921	5,921	0	0	0
EIP Receivable Balance	0	0	0	0	0	0	1,500			
Diluted Shares Out.	2,841	2,836	2,828	2,836	2,858	2,862	4,145	***4,157***	***4,159***	***4,164***
Share Price	33.90	33.13	35.78	40.12	43.27	49.14	48.93	48.93	48.93	48.93
Mkt. Value Equity	96,310	93,947	101,188	113,761	123,678	140,639	202,815	203,402	203,500	203,745
Cash From Oper. (CFO)	27,452	31,390	33,363	29,780	31,486	38,818	36,474			
- Rev. Chg. in W/C	3,033	2,511	(202)	2,279	403	5	(808)			
Funds From Oper. (FFO)	30,485	33,901	33,161	32,059	31,889	38,823	35,666	33,423	33,352	34,210
- Less Capex	(17,133)	(16,872)	(16,458)	(16,244)	(16,175)	(16,604)	(17,482)	(17,027)	(17,560)	(17,563)
Free Cash Flow (FCF)	13,352	17,029	16,703	15,815	15,714	22,219	18,184	16,396	15,792	16,647
- Less Dividends	(4,994)	(5,271)	(5,412)	(5,555)	(5,230)	(5,936)	(6,573)	***(8,896)***	***(9,067)***	***(9,244)***
Discr. Cash Flow (DCF)	8,358	11,758	11,291	10,260	10,484	16,283	11,611	7,500	6,726	7,403
- Chg. in Working Cap.	(3,033)	(2,511)	202	(2,279)	(403)	(5)	808	***(1,200)***	***0***	***0***
DCF After W/C	5,325	9,247	11,493	7,981	10,081	16,278	12,419	6,300	6,726	7,403
Acquisitions (net)	(14,341)	(6,284)	4,487	(1,006)	(4,327)	1,771	(54,748)		***(5,000)***	
Equity Issue (Repo)	(1,352)	0	0	241	(8,010)	(3,218)	45	***0***	***0***	***0***
Debt Reduction (net)	(4,146)	(19,260)	(8,136)	(11,805)	(6,403)	(8,163)	(17,150)	***(5,000)***	***(1,700)***	***(7,400)***
Debt Finanacing Needs	(14,514)	(16,297)	7,844	(4,589)	(8,659)	6,668	(59,434)	1,300	26	3
Revenue Growth	4.2%	10.7%	-1.2%	4.0%	4.5%	4.1%	5.2%	4.9%	2.9%	2.3%
Adj. EBITDA Margin	34.1%	30.8%	33.0%	32.6%	33.1%	35.6%	36.0%	35.9%	36.5%	36.5%
Net Margin	4.1%	10.8%	9.6%	9.2%	9.1%	6.7%	6.8%	13.5%	12.6%	12.9%
EBITDA ROIC	26.2%	21.7%	24.8%	26.5%	26.7%	29.7%	34.4%	34.2%	34.3%	34.9%
FFO/(EBITDA-Int-Tax)	105.9%	120.2%	108.9%	101.0%	92.3%	99.6%	90.8%	100.0%	100.0%	100.0%
Avg. Interest Rate	6.1%	6.7%	7.6%	6.8%	5.3%	6.7%	3.8%	***4.5%***	***4.5%***	***4.5%***
Capex as % of Sales	17.6%	15.7%	15.4%	14.7%	14.0%	13.8%	14.1%	13.5%	13.5%	13.2%
EBITDA/Gross Interest	12.7x	8.0x	9.9x	12.5x	14.6x	15.8x	11.2x	9.7x	9.6x	10.3x
Adj. EBITDA/Fixed Chg	10.4x	6.8x	8.1x	9.9x	11.3x	12.1x	9.3x	8.3x	8.3x	8.8x
Net Debt/EBITDA	1.3x	1.9x	1.3x	1.2x	1.3x	1.0x	2.4x	2.2x	2.1x	1.9x
Adj. Net Debt/EBITDA	1.4x	2.1x	1.6x	1.4x	1.5x	1.1x	2.5x	2.4x	2.2x	2.0x
Adj. Gross Debt/EBITDA	1.7x	2.1x	1.8x	1.8x	1.6x	2.4x	2.7x	2.4x	2.2x	2.0x
Adj. ND + Pension/EBITDA	1.5x	2.2x	1.7x	1.6x	1.7x	1.3x	2.7x	2.4x	2.2x	2.0x
EV/EBITDA	4.3x	4.9x	4.4x	4.6x	4.7x	4.4x	7.1x	6.9x	6.5x	6.2x
Adj. Net Debt/Capital	37.7%	45.0%	38.8%	37.2%	40.3%	34.1%	87.6%	81.7%	77.1%	71.5%
Adj. Net Debt/Market Cap.	33.2%	42.4%	35.3%	30.9%	31.8%	26.0%	35.9%	34.8%	34.4%	32.8%
FFO/Adj. Net Debt	63.8%	49.1%	60.1%	63.1%	55.3%	78.7%	31.4%	30.8%	31.2%	34.4%
FCF/Adj. Net Debt	27.9%	24.7%	30.3%	31.1%	27.2%	45.1%	16.0%	15.1%	14.8%	16.8%
DCF/Adj. Net Debt	17.5%	17.0%	20.5%	20.2%	18.2%	33.0%	10.2%	6.9%	6.3%	7.5%
DCF (W/C)/Adj. Net Debt	11.1%	13.4%	20.8%	15.7%	17.5%	33.0%	10.9%	5.8%	6.3%	7.5%

Projection assumptions in ***Bold Italics*** (Morgan Stanley, 7/14).

Verizon Communications Inc. - Liquidity Summary

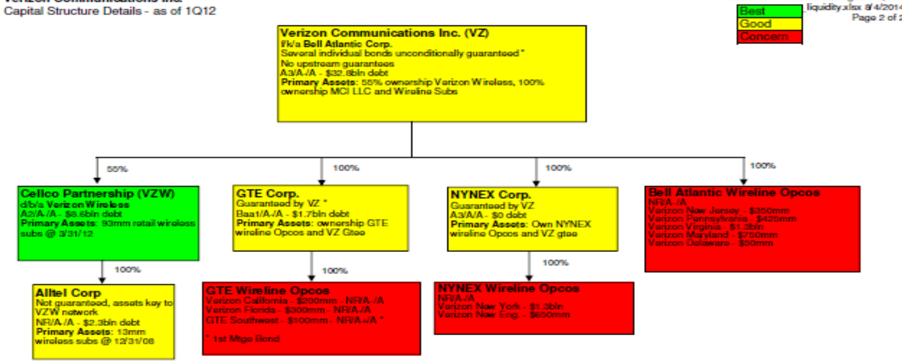
Description	Size	Balance	Comments
Bank Revolver	6,200		Matures 8/2/17
New 364 Day Revolver	2,000		Matures Sept 2014
Committed Facilities	**8,200**		
Cash Balance	5,776		at 6/30/14
CP Outstanding	0		at 6/30/14
Bank Borrowings	(100)		at 6/30/14
Net Availability:	**13,876**		
364 Day Revolver Matures	(2,000)	11,876	
VZ 1.25% due 11/3/14	(750)	11,126	
Free Cash Flow	3,250	14,376	Estimate
Est. 12/31/14 Liquidity	**14,376**		
VZ FRN due 3/6/15	(500)	13,876	
VZ 4.90% due 9/15/15	(500)	13,376	
VZ 0.70% due 11/2/15	(1,000)	12,376	
VZW 8.75% due 12/18/15	(690)	11,686	€500mm
Free Cash Flow	6,000	17,686	Estimate
Est. 12/31/15 Liquidity	**17,686**		
VZ 5.55% due 2/15/16	(598)	17,088	Tender 3/14
VZW 7.0% due 3/15/16	(143)	16,944	Tender 3/14
VZ 3.0% due 4/1/16	(1,250)	15,694	
VZ 2.5% & FRN due 9/15/16	(6,500)	9,194	
VZ 2.0% due 11/1/16	(1,250)	7,944	
Free Cash Flow	7,000	14,944	Estimate
Est. 12/31/16 Liquidity	**14,944**		

Bank Covenants

* Bank line details not made public.
* 364 day includes 3.5x max leverage

Verizon Communications Inc.
Capital Structure Details - as of 1Q12

Blackrock Financial Management, Inc.
liquidity.xlsx 8/4/2014
Page 2 of 2



* GTE guarantee has a 5 day delay before it can be enforced.

VZ Indenture 12/1/00 US Bank NA
Negative pledge limits all leins at parent holdco, no limit on subsidiaries

Verizon Communiations Inc.
Sum Of Parts Valuation Analysis

Blackrock Financial Management, Inc.
vz_valuation.xlsx 8/4/2014
Page 1 of 4

Segment	2014E Financials Revenues	EBITDA	Gross Asset Value	EBITDA Multiple	Valuation 100% NAV	% Owned	Proport. NAV	Per Share	Comment
Wireless	73,147	36,529	375,073	10.3x	371,987	100.0%	371,987	$89.74	DCF
Wireline	38,924	8,936	41,315	4.6x	24,420	100.0%	24,420	$5.89	DCF
Other	14,389	-120					0	$0.00	
Total	**126,460**	**45,345**	**416,388**	**9.2x**	**396,407**		**396,407**	**$95.63**	
				Prop. NAV		Plus Cash:	5,776	$1.39	
% of Total:						Less Gross Debt:	(103,839)	($25.05)	Holdco Debt
Wireless	57.8%	80.6%	90.1%	93.8%		Less Off B/S Liabs:	(9,240)	($2.23)	
Wireline	30.8%	19.7%	9.9%	6.2%		Less Pension/OPEB:	0	$0.00	
Other	11.4%	-0.3%	0.0%	0.0%		Unconsolidated Investments:	0	$0.00	
	100.0%	100.0%	100.0%	100.0%		Other:	0	$0.00	
						Residual Equity Value:	**289,104**	**$69.75**	
Weight Avg. Growth Rate:		0.21%	0.35%	0.41%		Shares Outstanding:	4,145		
Consolidated Growth Assumed:				0.45%		**Value/Share:**	**$69.75**		
DCF Sensitivity		Low	Base	High		**Implied Bond Recovery:**	**100.0%**		

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Verizon Communications analysis

VZ buy-in of VOD minority stake elevated leverage, becoming a de-leveraging story

Verizon Communications
Buy-In of Verizon Wireless Analysis

Blackrock Financial Management
vz_vzw_NewBuyIn.xlsx 8/4/
Page 1

Deal Valuation		
VOD Stake Sales Price	130,000	
Plus VOD Prop Net Debt	7,411	
Total VOD Ent. Value	**137,411**	
VOD Ownership Stake	45.0%	
Total VZW Ent. Value	**305,357**	
2014E EBITDA	35,946	
2014E EV/EBITDA	**8.5x**	

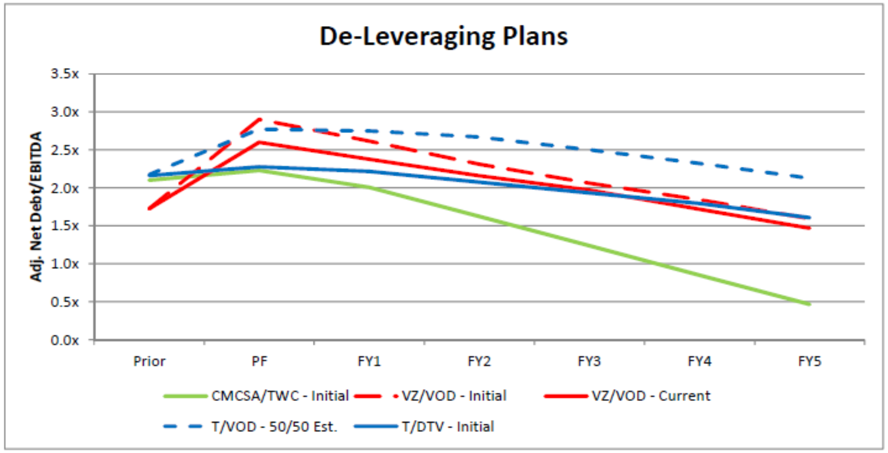
Funding Needs		
VOD Equity Value	130,000	
Fees/Expenses/Other	826	
New Common Shares	(60,150)	Collar $47-51/Share
Vodafone Italy Stake	(3,500)	4.6x EV/EBITDA
Initial VZ Debt Portion	**67,176**	
Est. VZW FCF Until Close	(5,000)	
Asset Sales	(1,900)	Spectrum Sale to AT&T
VZ Net Debt Increase	**60,276**	
Seller Notes to VOD	(5,000)	8yr and 11yr, NC2
Preferred Stock Assumed	(1,650)	Existing Issues
VZ Net Funding Need	**53,626**	

Potential Funding Structure	
VZ Net Funding Need	60,276
Est. Loan Funding	(12,000)
Net Bond Market Funding	**48,276**
Est. Euro Funding	
Est. Sterling Funding	
Other Non-$ Markets	
USD Retail	
Net USD Bond Mkt Needs	**48,276**

VZ Capital Structure	LTM 6/14	'13E Mult.
Consol. Gross Debt	109,979	2.5x
Consol. Cash	(5,776)	
Consol. Net Debt	**104,203**	**2.4x**
Consol. NPV Leases	9,240	
Consol. Ad. Net Debt	**113,443**	**2.6x**
VZ Price	$50.21	
VZ Shares	4,145	
VZ Market Value	208,120	
Consol. Enterprise Value	**321,563**	**7.3x**
Less VOD Prop. Debt		
Prop. Enterprise Value		

Transaction Summaries

	Debt Assumed	New Debt	Equity	Other	Total
CMCSA/TWC	25,210	(2,500)	42,347	2,500	67,557
VZ/VOD - Initial	9,061	67,176	60,150	1,024	137,411
T/VOD - 50/50 Est.	32,998	56,815	56,815	0	146,628
T/DTV - Initial	18,454	6,472	33,769	8,000	66,695



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Equity and bond market analysis

Equity market awareness is critical to understand

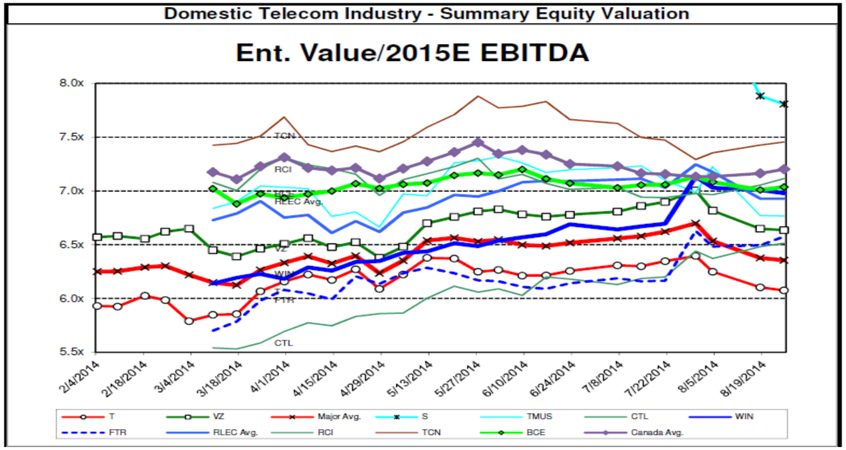
North American Telecommunications Industry

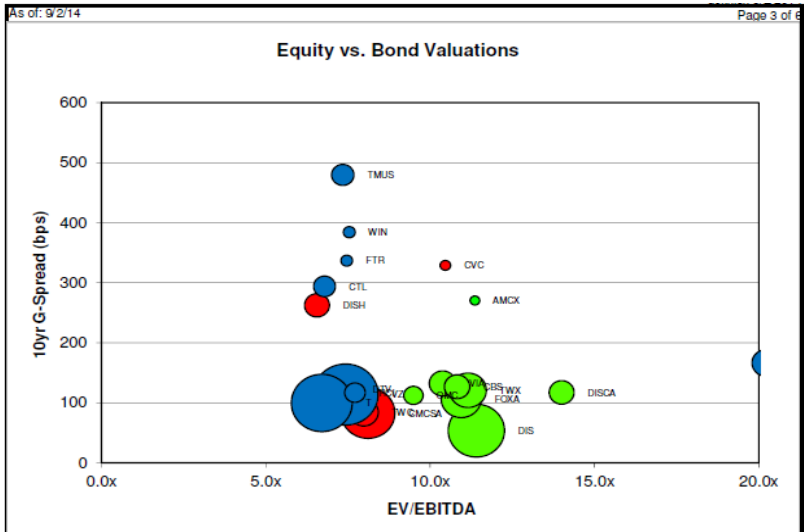
Equity Valuation Comparison of Major Competitors

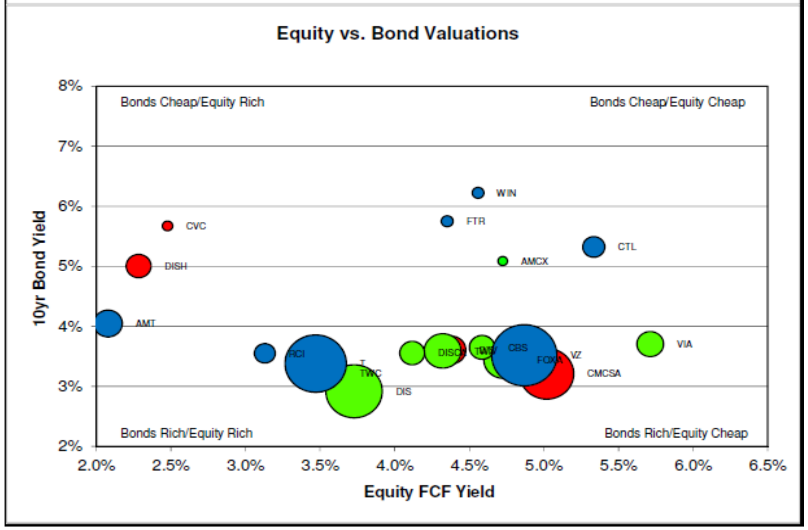
As of 8/25/2014

Company Name	Price 8/25/2014	Actual Shares (MM)	Enterprise Value ($MM)	Adj. Debt/ Ent. Val.	Enterprise Value as Multiple: EBITDA LTM	EBITDA 2014	EBITDA 2015	Revenues LTM	Revenues 2014	Revenues 2015	Equity FCF Yield LTM	Equity FCF Yield 2014	Equity FCF Yield 2015
Major Domestic													
Verizon Comm.	$48.64	4,145	$315,056	36.0%	7.1x	6.9x	6.6x	2.5x	2.5x	2.4x	9.0%	8.1%	7.8%
AT&T	$34.50	5,186	$272,100	34.2%	6.3x	6.3x	6.1x	2.1x	2.0x	2.0x	5.4%	5.6%	6.0%
		Mean:	**$293,578**	**35.1%**	**6.7x**	**6.6x**	**6.4x**	**2.3x**	**2.3x**	**2.2x**	**7.2%**	**6.9%**	**6.9%**
Smaller Domestic													
Sprint Nextel	$5.54	3,936	$61,076	64.3%	9.9x	8.3x	7.8x	1.7x	1.7x	1.7x	-18.7%	-11.2%	-3.4%
T-Mobile USA	$29.02	803	$52,144	55.3%	9.4x	7.8x	6.8x	2.6x	2.3x	2.1x	2.4%	-0.1%	3.4%
CenturyLink	$40.80	573	$45,859	49.0%	6.6x	6.5x	6.5x	2.5x	2.5x	2.5x	12.0%	10.7%	8.2%
Windstream	$11.25	596	$15,809	57.6%	6.8x	6.9x	7.0x	2.6x	2.7x	2.7x	12.5%	10.1%	9.4%
Frontier Communicatio	$6.68	999	$14,037	52.4%	6.3x	6.4x	6.6x	2.9x	3.0x	3.1x	13.4%	11.7%	11.7%
		Mean:	**$37,785**	**55.7%**	**7.8x**	**7.2x**	**6.9x**	**2.5x**	**2.5x**	**2.4x**	**4.3%**	**4.2%**	**5.9%**
Canadian													
Rogers Comm.	C$43.86	515	$33,793	39.0%	7.3x	7.2x	7.1x	2.9x	2.8x	2.8x	6.7%	6.4%	5.8%
BCE Inc.	C$48.60	776	$55,488	32.4%	7.5x	7.2x	7.0x	3.0x	2.9x	2.8x	8.2%	9.4%	9.5%
Telus	C$38.69	626	$30,524	27.6%	8.3x	7.9x	7.5x	2.9x	2.8x	2.7x	4.2%	4.4%	5.1%
		Mean:	**$39,935**	**33.0%**	**7.7x**	**7.4x**	**7.2x**	**2.9x**	**2.8x**	**2.8x**	**6.4%**	**6.7%**	**6.8%**
Towers													
American Tower	$98.13	395	$56,759	31.7%	22.7x	20.5x	18.7x	14.9x	14.0x	12.9x	2.2%	2.8%	3.8%
Crown Castle	$79.48	334	$42,419	37.5%	17.0x	18.8x	17.9x	12.7x	12.0x	11.7x	2.7%	3.9%	4.5%
SBA Comm.	$108.59	129	$21,933	36.2%	24.1x	21.3x	19.5x	16.4x	14.8x	13.9x	3.1%	4.3%	4.9%
		Mean:	**$40,371**	**35.1%**	**21.3x**	**20.2x**	**18.7x**	**14.7x**	**13.6x**	**12.8x**	**2.7%**	**3.7%**	**4.4%**
America Movil	P$15.71	70,202	$120,453	30.2%	6.0x	6.0x	5.7x	2.0x	1.9x	1.7x	6.0%	5.1%	5.5%

Currency Conversions: €1.000=$1.320, $1.00=£1.66, A$1.000=$0.931, and C$1.000=$0.913







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Verizon 2Q14 - Some Cross Currents But Overall Solid/Bonds Remain Cheap

Key Takeaways:

- Rebound in wireless subscriber growth from soft 1Q, but mixed revenue and margin results. Full year guidance affirmed.
- Wireless capex remains elevated as the 4G network build and capacity expansion continues.
- Wireline stronger than expected with improved Enterprise results in the quarter
- Net debt lower by $2.6bln with leverage a tick lower to 2.5x

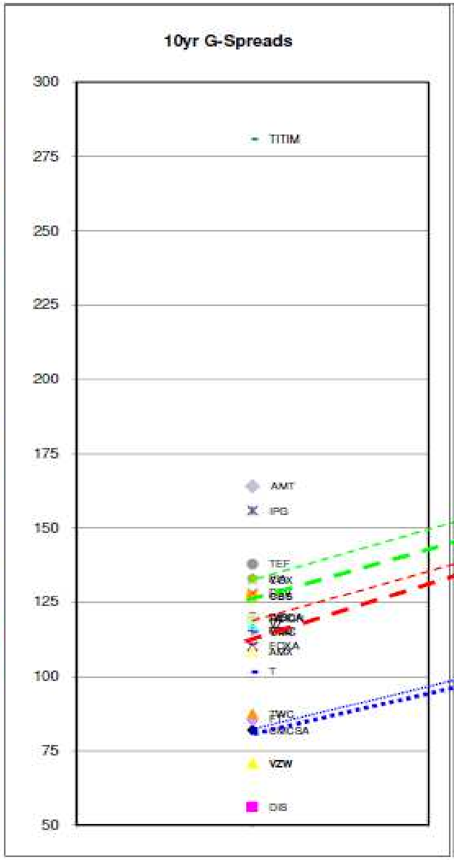
Valuation Views:

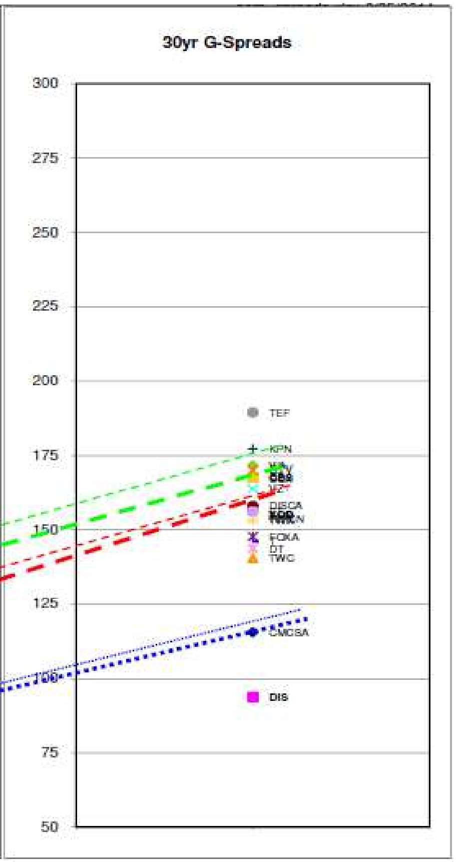
- **Recommendation: Strong Overweight –** At G+118 (intermediate) and T+164 (long) VZ remains 50bps behind CMCSA. VZ is a Very Strong fundamental story with temporarily elevated leverage. Meaningful spread upside over next 1-2 years as expect compression towards a small discount to CMCSA levels ultimately. Big event risk is behind it though some uncertainty is possible ahead of a spectrum auction expected in 4Q14.

Fundamental View: Very Strong, Improving.
Wireless remains the primary value driver for VZ which offsets the secular drag of its Wireline business. VZ is the strongest performer in the US wireless industry which is effectively a duopoly along with AT&T though is seeing increased competitive pressures as Sprint and T-Mobile attempt to re-gain market relevance. These efforts are expected to remain manageable over time but are important to monitor. The secular growth driver is wireless data as smartphone and tablet adoption continues to increase over the near term and additional devices and applications expand the market over the longer term. Following the recently completed purchase of the 45% of VZW that was owned by VOD the event risk overhang has now gone away and has left an attractive de-leveraging story in its place. Management has commented that it believes reducing leverage from initial pro forma expectations of 2.9x to below 2.0x to regain its single-A ratings is possible in a 4-5 year horizon, though I believe that horizon is likely to be substantially shorter and is realistic in a bit over two years. The primary uncertainty with this path is future spectrum purchases which VZ is expected to continue to be active as it becomes available. The Wireline businesses are now largely treading water after much restructuring efforts in recent years and continue to be a very small value driver for the company.

As of:8/25/14

		G-Spreads			Change	
Company	Rating	10yr	30yr	Curve	10yr	30yr
CMCSA	A2	82	116	34	(2)	(3)
DIS	A2	56	94	37	4	(1)
VZW	A2	71	N/A	N/M	(8)	N/M
VZ	A3	118	164	46	(4)	(0)
FOXA	BBB1	110	148	38	(6)	(0)
DISCA	BBB2	120	158	38	(6)	(5)
VOD	BBB1	115	155	40	5	4
T	A3	102	146	44	(1)	(2)
RCICN	BBB1	119	154	34	(6)	(8)
AMX	A3	109	154	46	(7)	0
COX	BBB2	133	167	35	(6)	(3)
DT	BBB2	N/A	144	NM	NM	(3)
FT	A3	86	156	71	(1)	(8)
TWX	BBB2	120	153	33	(6)	(5)
OMC	BBB2	115	N/A	N/M	1	N/M
BT	BBB1	N/A	168	NM	NM	1
VIA	BBB3	133	172	38	(3)	(3)
CBS	BBB3	127	168	41	(5)	(9)
TWC	BBB2	87	141	53	(8)	(5)
DTV	BBB2	128	170	42	(7)	(3)
AMT	BBB3	164	N/A	N/M	(4)	N/M
IPG	BBB3	156	N/A	NM	4	NM
TEF	BBB3	138	189	52	(1)	(2)
KPN	BBB3	N/A	177	NM	NM	6
TITIM	BBB3	281	343	62	(25)	(19)
CTL	BB2	301	449	148	1	4





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Hypothetical Example
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Investing in the bond market is subject to certain risks including market, interest-rate, issuer, credit, and inflation risk; investments may be worth more or less than the original cost when redeemed. Investing in foreign denominated and/or domiciled securities may involve heightened risk due to currency fluctuations, and economic and political risks, which may be enhanced in emerging markets. Mortgage and asset-backed securities may be sensitive to changes in interest rates, subject to early repayment risk, and their value may fluctuate in response to the market's perception of issuer creditworthiness; while generally supported by some form of government or private guarantee there is no assurance that private guarantors will meet their obligations. High-yield, lower-rated, securities involve greater risk than higher-rated securities; portfolios that invest in them may be subject to greater levels of credit and liquidity risk than portfolios that do not. Equities may decline in value due to both real and perceived general market, economic, and industry conditions. Derivatives may involve certain costs and risks such as liquidity, interest rate, market, credit, management and the risk that a position could not be closed when most advantageous. Investing in derivatives could lose more than the amount invested. Diversification does not ensure against loss.

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It is not possible to invest directly in an unmanaged index.

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Advanced Fixed Income

NEW YORK • 8 – 12 SEPTEMBER 2014

BLACKROCK®

Fixed Income Trading – Solving the Liquidity Challenge

SUPURNA VEDBRAT, MANAGING DIRECTOR

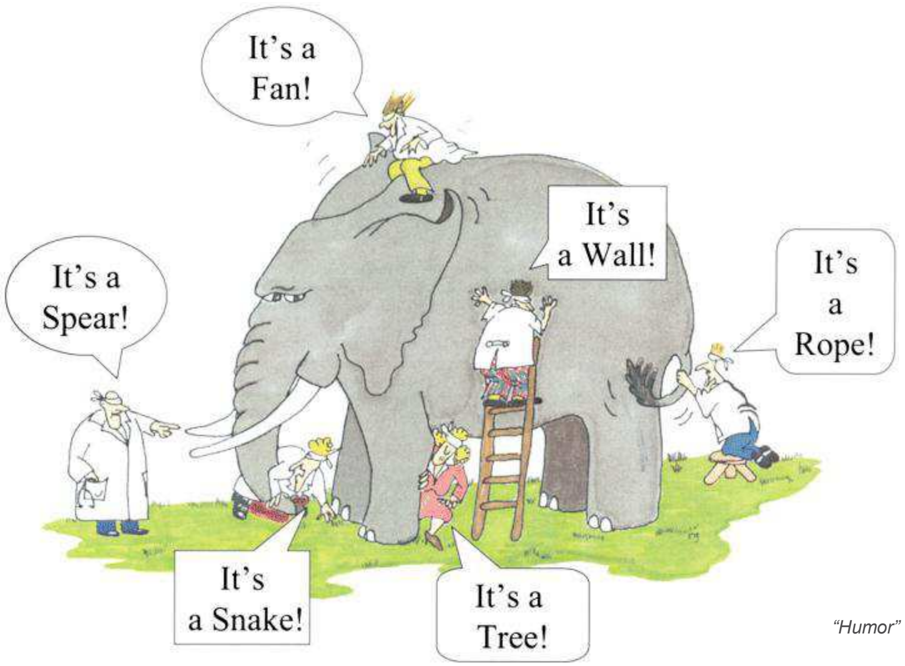
Defining Liquidity

Definitions of Liquidity vary considerably

- Liquidity as amount of turnover (Barra, Ibbotson, et. Al)
- Liquidity means that trading volume (or order flow) doesn't move prices very much (Amihud, Acharya, and Pedersen)
- Liquidity measures the extent to which trade prices do not revert the following day (Pastor and Stambaugh)

All of these approaches to analyzing and thinking about liquidity typically lead to similar conclusions

- Broadly defined, liquidity is a function of investor confidence in the market and conviction to trade at the quoted price



"Humor" sourced from Ron Kahn

Global Liquidity Environment

Section I

Liquidity Market Dynamic Currently Undergoing Rapid Evolution

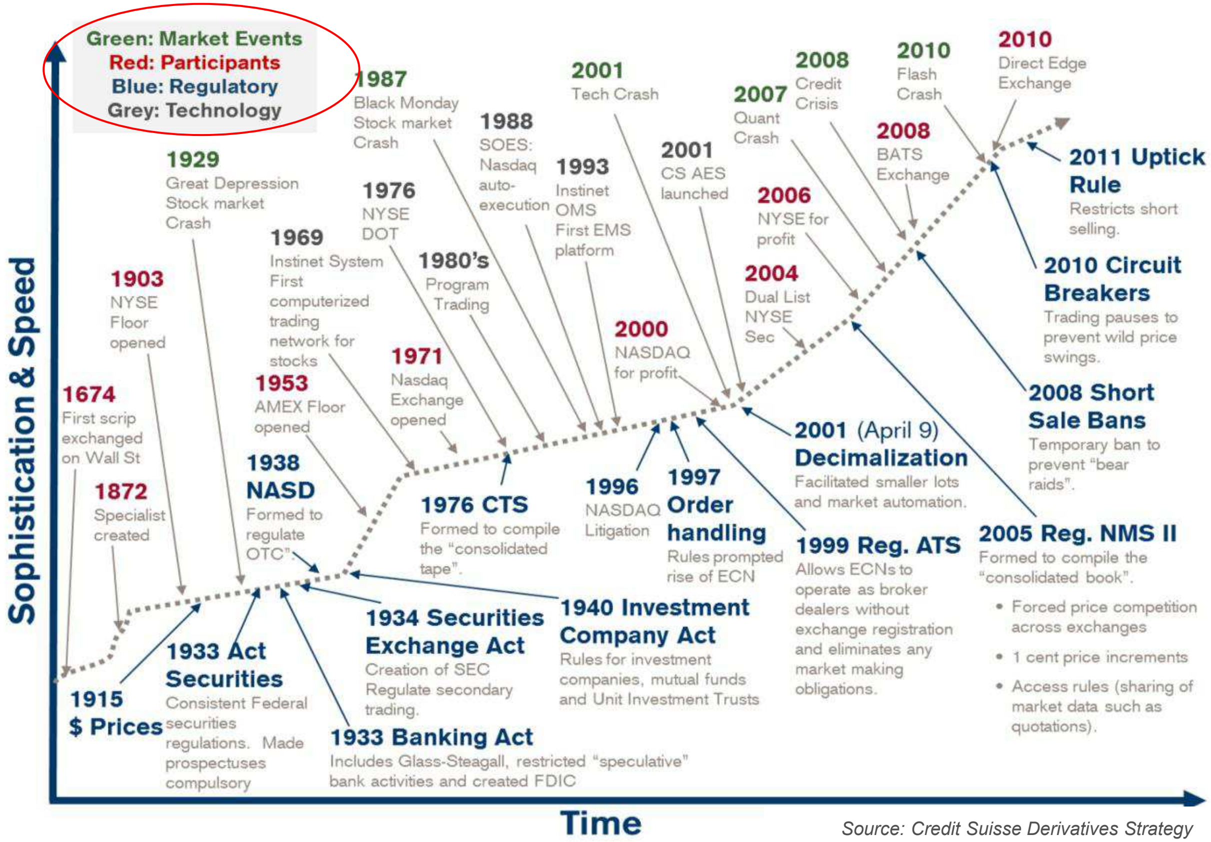
Broker-Dealer Industry Consolidation	▸ Number of broker-dealer institutions has declined significantly and the remaining institutions have reduced their activities
Market Structure Evolution	▸ Warehousing risk is becoming more expensive, leading to a tipping point from the traditional market-maker principal model to an agency model of liquidity provision ▸ E-trading volumes have grown rapidly, however, impact of depth of liquidity will be contingent on greater standardization over time
More Transactions, Lower Transaction Sizes	▸ Investors are executing more transactions and in lower transaction sizes ▸ Reduces market's ability to absorb large secondary trades; price impact of a large trade is increased
Increased Volume amid Lower Turnover	▸ Robust primary issue volumes are currently masking the underlying challenges in secondary market liquidity ▸ Overall growth in debt outstanding has significantly outpaced average trading volume
New Issues Filling the Gap	▸ New issuance volumes remain robust and have become an increasingly important source of liquidity – Newly printed bonds experience strong trading support initially, but activity declines thereafter ▸ As rate environment normalizes, unclear whether new issue volumes will be sustained

Structural Change Driven by Certain Catalysts

Equity Markets have evolved meaningfully over time

- Underwent a particularly rapid development with the advent of new technological and regulatory regime in the early 2000s
- Change driven by combination of market events, participant evolution, regulatory change, and technology development

Key events in the evolution of the US Stock market



Source: Credit Suisse Derivatives Strategy

Broker-Dealer Industry Consolidation

Consolidation has demonstrably reduced total broker-dealer risk capital in the market

- Significant post-crisis consolidation has significantly decreased the number of active broker-dealers since the 1980s
- Additionally, the number of primary dealers has declined from 46 in ‘88 to 22 in ’14
- Regulatory pressures causing those B-Ds that remain to limit scope of activity and exit risk-intensive business lines

Predecessor Investment and Commercial Banks

- Alex Brown
- Bear Stearns
- Blythe Eastman
- Bowles Hollowell Connor
- Cowen & Co.
- Countrywide
- Dean Witter
- Dillon Read
- DLJ
- Drexel
- First Boston
- Goldman Sachs
- Hambrecht & Quist
- J.C. Bradford
- Kidder Peabody
- Lazard Freres
- Lehman Brothers
- LF Rothschild
- Loeb Rhodes
- Merrill Lynch
- Montgomery Securities
- Morgan Stanley
- Paine Webber
- Piper Jaffray
- Robertson Colman
- Robinson Humphrey
- Salomon Brothers
- Shearson Hayden Stone
- Smith Barney
- UBS
- White Weld
- Bank of America
- BankBoston
- Bankers Trust
- Chase Manhattan
- Chemical
- Citicorp
- Deutsche Bank
- First Union
- Fleet
- JP Morgan
- Manufacturers Hanover
- Nations Bank
- U.S. Bancorp
- Wachovia
- Washington Mutual

Indicates institutions that failed during the financial crisis

U.S. Universal

- JPM Chase
- Citi
- Bank of America
- Wells Fargo (Wachovia)

U.S. Inv. Banks

- Goldman Sachs
- Morgan Stanley

European Universal

- Deutsche Bank
- Credit Suisse
- Barclays
- HSBC
- UBS
- RBS

Other

- Regionals
- Mid-Size Inv. Banks
- Boutiques

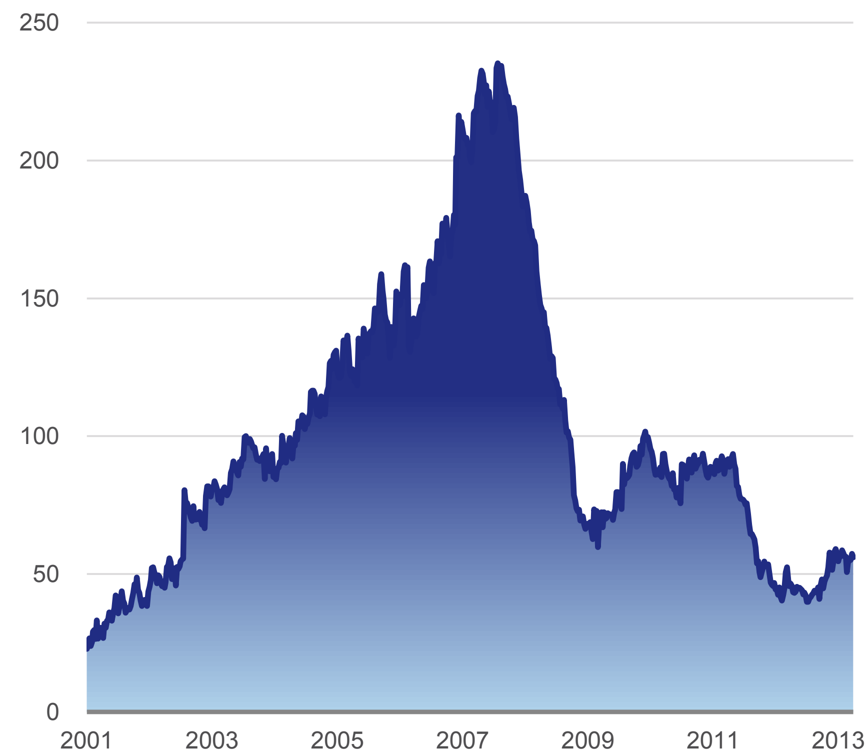
Post-Crisis Regulatory Regime Pressuring Fixed Income Liquidity

Post Crisis Regulatory Pressure Continuing…

Topic	Impact
Basel III	▸ Required risk capital increasing through 2019
Capital Standards	▸ Tier 1 deductions increasing through 2018
Liquidity Ratio (SLC)	▸ Banks will be required to hold high quality liquid assets to protect against cash outflows ▸ Required ratio increasing through 2017
Dodd Frank / Volcker Rule	▸ Significant limits on principal trading activity and burdensome reporting requirements for market-making ▸ Deadline just extended through 2017

…Pressuring Dealer Balance Sheet Capacity

Value of Fixed Income Dealer Inventory (US Billions)



Source: Federal Reserve

Significant reduction in return on capital from Fixed Income market-making

Fixed Income Markets Undergoing a Structural, Not Cyclical, Change

Spreads have declined since the crisis but remain elevated relative to pre-crisis levels

- However, market shallowness with absence of B-D liquidity backstop could pressure spreads in a dislocation

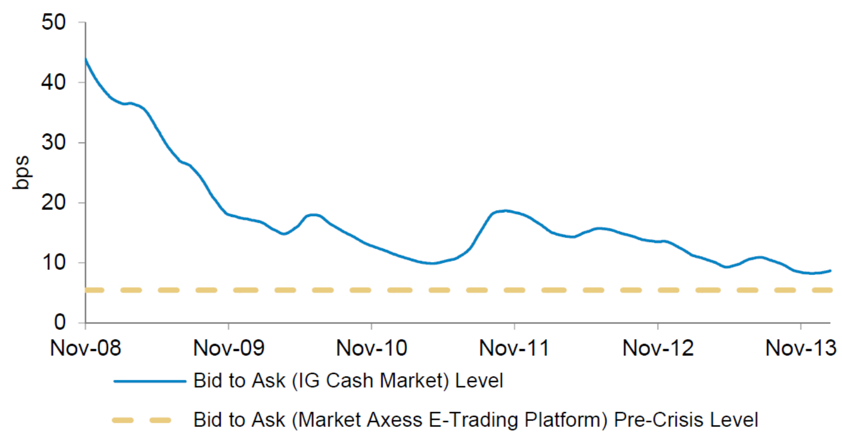
Electronic trading platforms have emerged to aggregate liquidity

- Though majority of corporate bond trading still occurs via phone, institutional clients now have access to additional liquidity sources
- Electronic venues provide a means for increased client-to-client matching of flow

Nonetheless, corporate bond e-trading is still dealer-centric and in its nascent stages

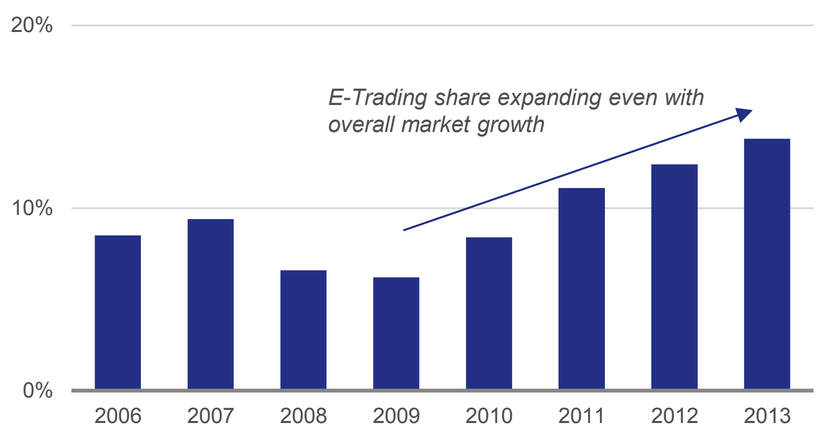
Corporate bond trading in the secondary market may be enhanced via standardized issuance

Spreads Down Since Crisis but Higher than Pre-Crisis



Source: Morgan Stanley

E-Trading Volume as a % of Total HG Corp Bond Volume



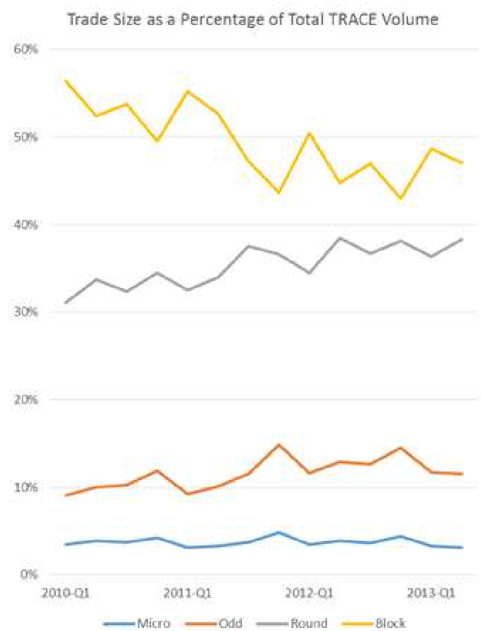
Source: MarketAxess

More Transactions, Lower Transaction Sizes

In both Fixed Income and Equity markets, overall trend has been toward declining trade size and increasing number of transactions

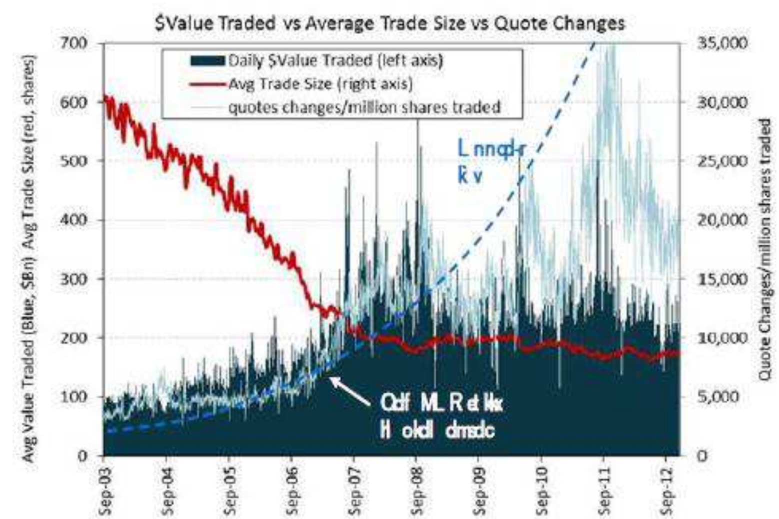
- Market participants face pressures to optimize over multiple trades and venues in order to execute large orders
- Depth of liquidity at market quoted prices increasingly a question
  - What size trade can actually be executed at quoted prices?
  - Potentially significant price movement to execute a large trade

Average Trade Size in Corporate Bonds is Declining



Source: MarketAxess Research, TRACE

Equities[1]

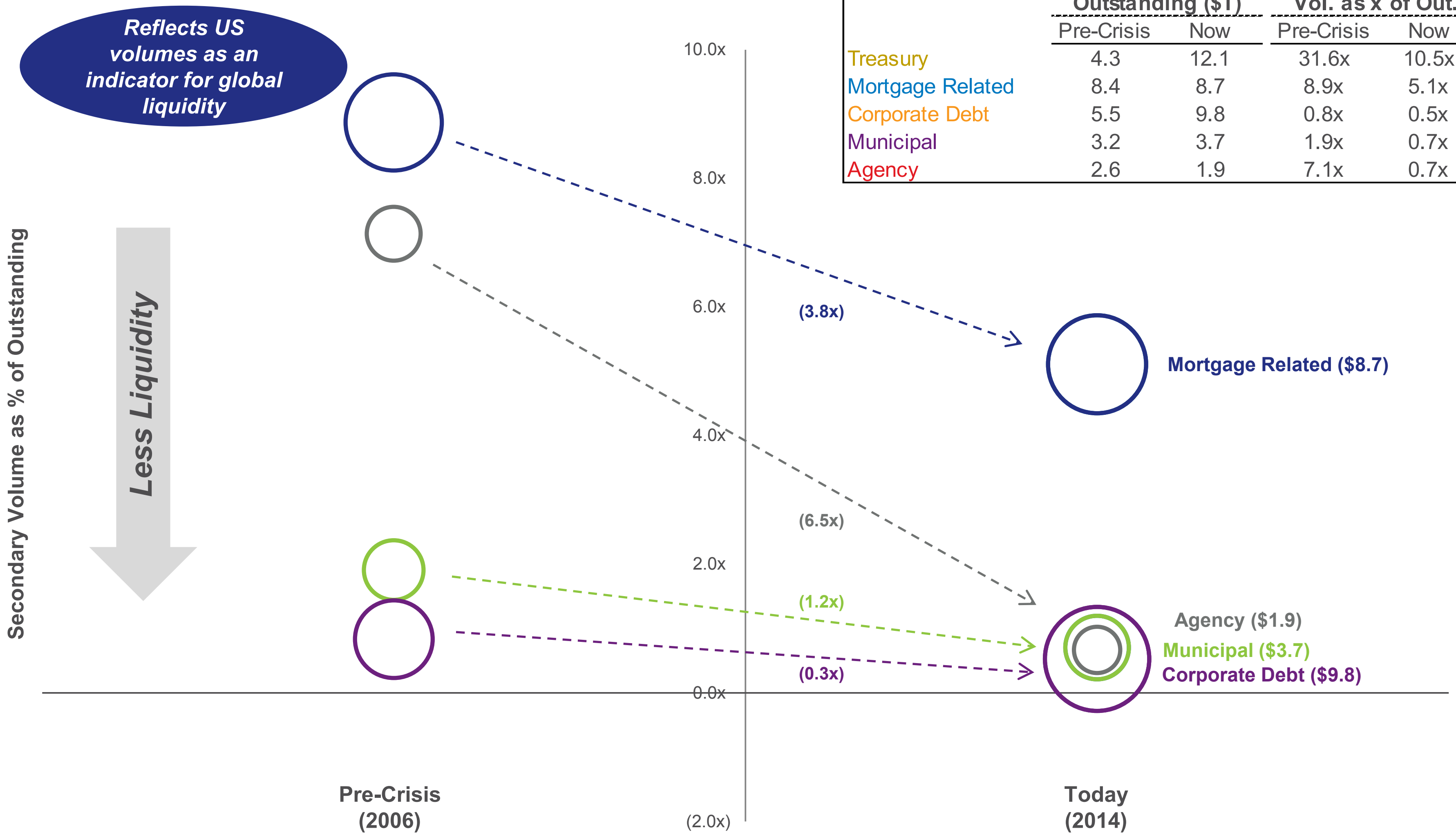


Source: Credit Suisse Trading Strategy

1. Impact of computer on trading: order size shrunk (red line), quote changes increased (blue line), volumes increased.

Lower Fixed Income Turnover Relative to Outstandings

	Outstanding ($T)		Vol. as x of Out.	
	Pre-Crisis	Now	Pre-Crisis	Now
Treasury	4.3	12.1	31.6x	10.5x
Mortgage Related	8.4	8.7	8.9x	5.1x
Corporate Debt	5.5	9.8	0.8x	0.5x
Municipal	3.2	3.7	1.9x	0.7x
Agency	2.6	1.9	7.1x	0.7x



Notes:
- Bubble size reflects total outstanding. Graph excludes Treasuries.
- 2014 turnover is based on annualized July YTD average daily trading volume; total outstanding as of 1Q14.

Source: SIFMA

Primary Issuance Helps Fill the Gap

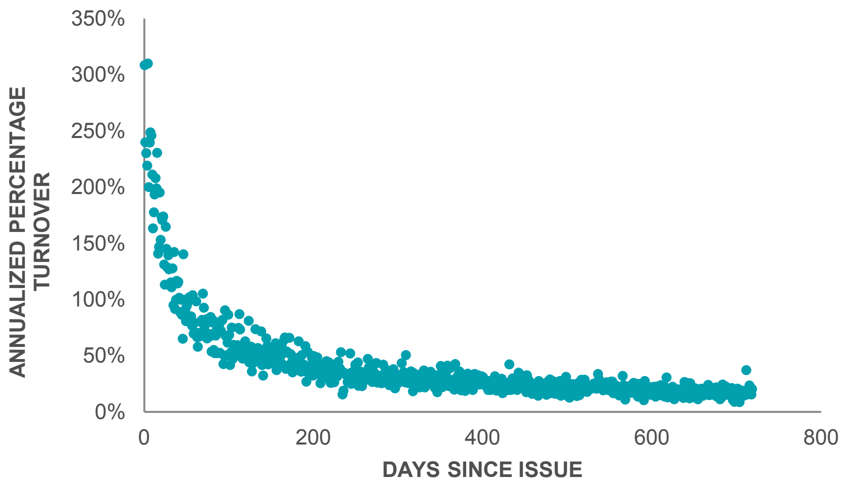
As secondary market liquidity is falling relative to outstandings, participants are increasingly turning to new issues as a source of liquidity

- New issues offer significantly higher depth of trading volume than more seasoned issues
- Record low interest rates have served to support elevated volume levels in recent years

Despite low concessions, new issues remain an important source of alpha in the low rate environment

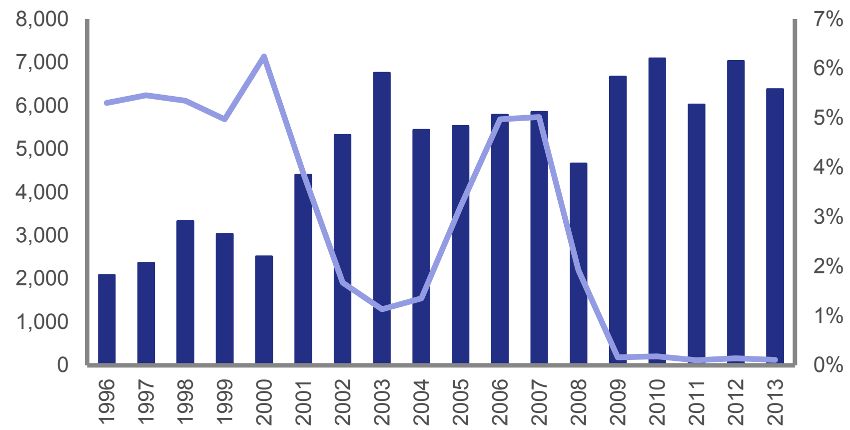
- As the interest rate environment normalizes, unclear on availability of liquidity from new issues

Trading Volumes by Age of Issue



Source: MarketAxess

Aggregate US Fixed Income Issuance vs. Fed Funds



Source: SIFMA

BlackRock's Responses

Section II

BlackRock has Already Taken a Number of Steps

BlackRock has already taken a number of steps to improve its trading infrastructure in order to optimize our capabilities against the evolving liquidity backdrop:

1 Global Order Routing

- Maximize access to liquidity via execution in regional centers of excellence

2 Global Capital Markets

- Pioneering “originate to manage” model
- Private side activity

3 e-Trading

- First-in-class Equity platform
- Thought leadership in Fixed Income

4 Crossing Initiative

- Implementation of Equity and Fixed Income crossing capabilities
- Utilization of mid-market levels

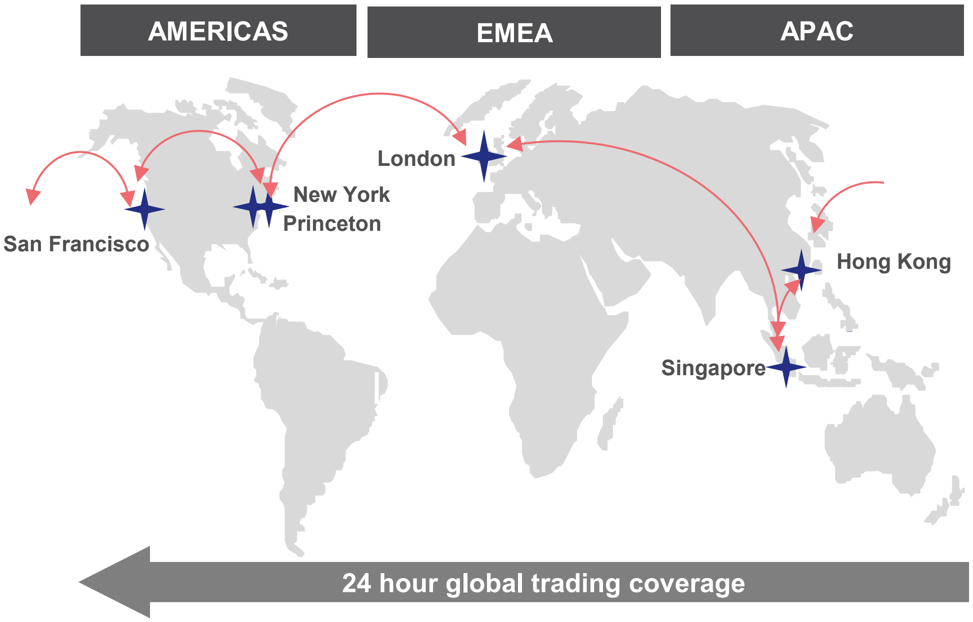
5 Aladdin Trading Network

- Strategic alliance with MKTX and other ECNs
- Promote client-to-client trading as additional liquidity
- Direct connectivity to aggregated Street inventory

Established a Global Order Routing Architecture

1 Global Order Routing

With global order routing, trades of a given security are routed to and executed in its local market



Improved liquidity

BlackRock identifies and accesses pockets of liquidity for which we would otherwise rely on local brokers

Local expertise

BlackRock leverages traders' local expertise and benefits from trading in the appropriate time zone

Stronger risk control

Allows BlackRock to continue trading through disastrous events

Seizing Opportunity in the New Issue Markets

Global Capital Markets (GCM) combines BlackRock's intellectual capital and client investable assets towards corporate finance solutions for issuers

Scalable business model across two core functions:

1. Capital Markets: Seeks to generate and execute alpha oriented investment opportunities arising from strategic corporate finance
2. Syndicate: Manage internal new issuance process for underwriter-originated transactions with goal of optimizing investment allocations

Global platform facilitating cross-currency and cross-asset opportunities

1 Capital Markets

- Idea generating
- Strategic partnering
- Creating alpha

+

2 Syndicate

- Concentrating buying power
- Managing distribution risk
- Enhancing allocations

Key benefits to BlackRock clients:

- Greater access to investment opportunities
- Enhanced ability to generate alpha/investment performance
- Maximize investment participation and allocations

Building Connectivity to Execution Channels

Fixed Income execution risk shifting from the sell-side to the buy-side

- Agency-style trading volumes grow as principal dealers face balance sheet pressures

"Equification of FICC": Execution is rapidly moving towards electronic trading with multiple liquidity venues

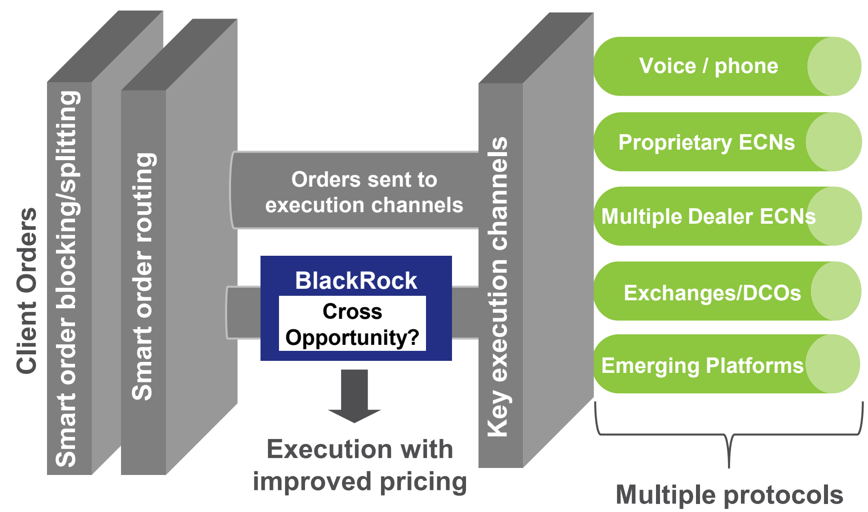
- Decline in transaction costs
- Decoupling of execution and counterparty risk with central clearing
- Reduction of operational risk through the removal of manual touch and increase of Straight-Through-Processing (STP)
- Encouragement of further standardization of products

Security types by percentage of e-Trading

voice	< 1/3 electronic	1/3 – 2/3 electronic	> 2/3 electronic	*electronic*
Fixed Income	• Derivatives • Corporates • Commodities • RMBS / CMBS	• US Treasuries (Off the Run) • Treasury Bills		
FX		• FX Forwards	• FX Spot	
Equities			• Equities	

Source: ICAP

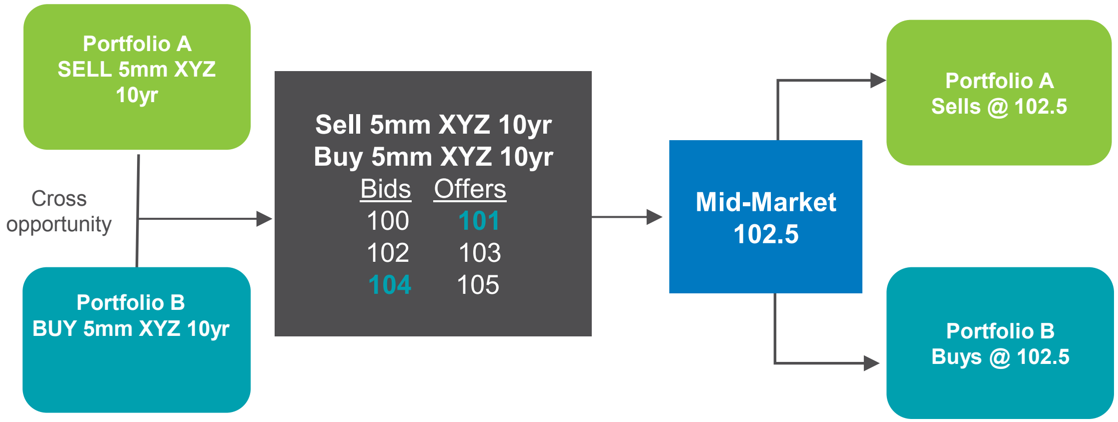
E-Trading framework



Crossing Provides Additional Avenues for Increased Liquidity and Improved Pricing

Leverage BlackRock's size and depth to facilitate cross trades; a transaction where, for the benefit of both clients, a trader matches buy and sell orders in the same security from different portfolios managed by firm

- **Increased liquidity**: Crossing can offer clients an additional venue of liquidity
  - 3,600+ potentially eligible fixed income accounts, comprising over $1 trillion in assets under management, provide a broad opportunity set for crossing.
- **Investment returns**: Participating portfolios benefit from reduced transaction costs, thus enhancing portfolio returns
- **Reduced market footprint:** Lessens market impact on pricing



Aggregating Liquidity into Aladdin

A liquidity portal, leveraging connectivity to integrate the marketplace within Aladdin

Order Management

Connectivity to Liquidity

Connectivity *to leading liquidity venues, including those offering open trading protocols*

Aggregated Inventory / Pricing

Aggregation *of inventory and pricing to facilitate sourcing of liquidity and trade decision support*

Integrated Trade Workflow

Workflow efficiency, *portfolio compliance, and Increased automation and integration between Aladdin and the marketplace*

Trade Analysis Tools

Pre and post trade analysis *(e.g. Transaction Cost Analysis) to optimize quality of execution*

Enhancing portfolio management workflow upstream through improved information flow

Execution Management

BlackRock®