



SOCIETY OF ACTUARIES

**Investment Symposium
March 2010**

**I6: Capital and Liquidity Considerations for
Effective Risk Management**

**Al Capra
Martin le Roux
Shaio-Tien Pan**

**Moderator
Shaio-Tien Pan**

Investment Symposium

Capital & Liquidity Considerations

Industry Overview

March 23, 2010



Observations on Liquidity, Capital & Credit

- **Liquidity and Capital – Bigger Picture Issues Largely Solved**
- **Credit – Improved M-t-M, but still working its way through the system**

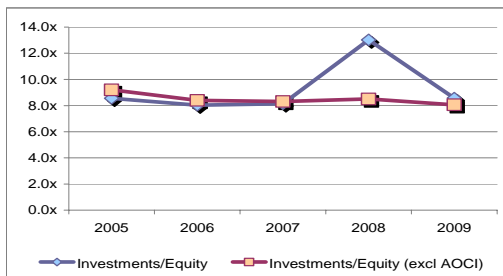
Key Observations:

- **2005-Early 2007: Excess Liquidity in Market**
 - ▶ RCF's, LoCs and CP
 - ▶ Capital Markets - Equity, Debt, Hybrids, Securitizations
- **Past/Prospective Impact on Product Design (e.g., Term/XXX, UL/AXXX)**
- **Liquidity Management**
 - ▶ Access to LoCs, Collateral
- **Operating Leverage Tolerances**
 - ▶ GICS and Funding Agreements, Securities Lending, Repo
- **Counter-party Credit Risk Management**
 - ▶ Reduced # of counter-parties, concentration issues
- **Capital Management**
 - Share Repurchases, Common Dividends, Capital Structure (Financial Leverage)



Operating Leverage

Proxy for Eight Large Cap Life Insurers - Leverage
(Based on GAAP Financials)



■ Modest leverage relative to banks, as measured by ratio of assets to equity

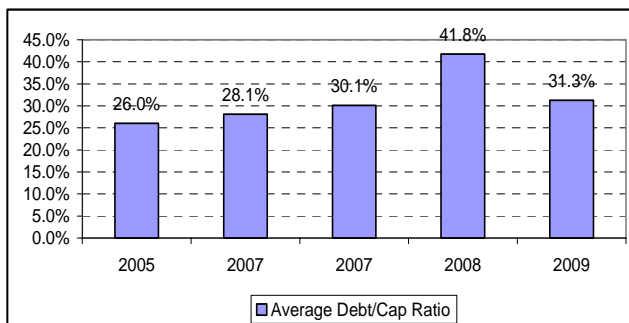
Note: Assets/Equity Ratio of 8.1x in 2009 (\$1,020 billion / \$127 billion).

	Capital & Surplus/ Assets (%)	Capital & Surplus/ Assets (%)	Capital & Surplus/ Assets (%)	Capital & Surplus/ Assets (%)	Capital & Surplus/ Assets (%)
	2009Y	2008Y	2007Y	2006Y	2005Y
Peer Average	8.18	7.09	7.82	7.52	7.52
Life Industry	NA	7.94	8.71	8.45	8.45

Financial Leverage

■ Modest financial leverage historically, but declines in GAAP Shareholders' Equity (tied to investments and intangibles) had an adverse impact on capital structure during 2008

Proxy for Eight Large Cap Life Insurers - Debt/Capitalization



Challenges During the Crisis

- Market began questioning ability to rollover debt due to confluence of liquidity concerns including lack of access to capital markets and reduced dividend capacity from operating subsidiaries to holding company

Proxy for Eight Large Cap Life Insurers - Outstanding Debt and Maturities

(\$ in Billions)

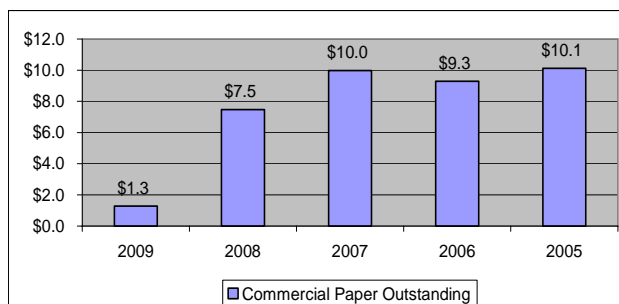
	2008	2009
Total Subordinated Debt	\$9.2	\$8.9
Senior Debt	<u>\$70.7</u>	<u>\$65.1</u>
Total Debt	\$80.5	\$74.0
Principal Payments-Current Fiscal Year	\$24.3	\$12.1
Principal Payments-Next Fiscal Year	\$4.4	\$3.4
Principal Payments-Second Fiscal Year	\$2.9	\$3.8
Principal Payments-Third Fiscal Year	\$1.9	\$3.0
Principal Payments-Forth Fiscal Year	\$2.9	\$3.5
Principal Payments-Thereafter	<u>\$44.0</u>	<u>\$48.3</u>
	\$80.5	\$74.0

Challenges During the Crisis

- Ratings events and growing roll-over risks adversely impacted flows and rates on CP

Proxy for Eight Large Cap Life Insurers - CP Market

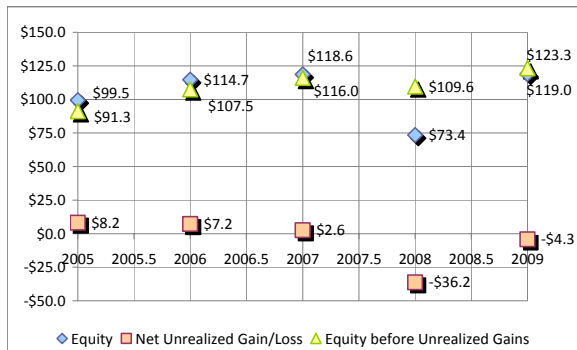
(\$ in Billions)



Challenges During the Crisis

- Growing uncertainties around depth and duration of crisis increased risks of crystallizing unrealized losses, both real and perceived

Proxy for Eight Large Cap Life Insurers - Net Unrealized Gains/Losses (GAAP, \$ in Billions)



Life Insurers – A Defensive / Resilient Group

- **Powerful Cash Generation Capabilities**
 - ▶ Recurring Premium, Reduce Strain from Lower New Sales, Liquid Profile of Investment Portfolio, and Reduced Dividends to Policyholders and Common Shareholders
 - ▶ Policyholder withdrawals did accelerate in 2009

Proxy for Eight Large Cap Life Insurers - Cash Flow Analysis (\$ in Billions)

	2009	2008	2007	2006	2005
Depreciation and Amortization	\$1.4	\$1.9	\$1.8	\$1.6	\$1.8
Operating Cash Flow	\$22.1	\$36.8	\$33.3	\$27.9	\$25.2
Investing Cash Flow	-\$35.3	-\$27.9	-\$28.3	-\$44.8	-\$47.6
Financing Cash Flow	-\$7.0	\$16.5	\$2.5	\$20.3	\$23.2
Other Cash Flow	<u>\$0.4</u>	<u>-\$0.1</u>	<u>\$0.3</u>	<u>\$0.1</u>	<u>-\$0.2</u>
Net Increase in Cash	-\$19.9	\$25.4	\$7.8	\$3.5	\$0.5

Life Insurers – A Defensive / Resilient Group

- Market focus shifted to liquidity and solvency

- Industry enhanced its liquidity cushion in response to the deterioration in the financial markets in 2008

Proxy for Eight Large Cap Life Insurers - Shift Toward Liquid (Cash) Investments (GAAP, \$ in Billions)

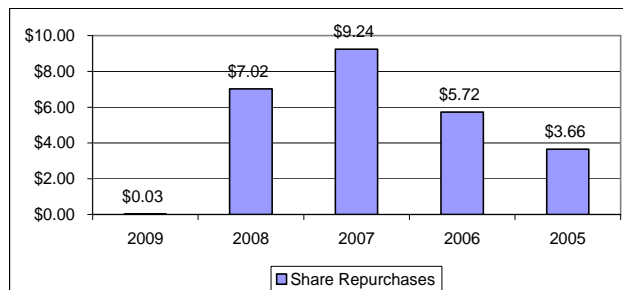
	2005	2006	2007	2008	2009
Total Investments	\$851.7	\$921.6	\$964.7	\$956.0	\$1,019.8
Yr./Yr. % Change	--	8.2%	4.7%	-0.9%	6.7%
Cash and Cash Equivalents	\$21.0	\$24.3	\$31.8	\$57.3	\$37.6
Yr./Yr. % Change	--	16.0%	31.1%	79.9%	-34.3%
As a % of Total Investments	2.5%	2.6%	3.3%	6.0%	3.7%

Capital Management

- Market focus shifted to capital adequacy

- Virtually all share repurchase activity was discontinued

Proxy for Eight Large Cap Life Insurers - Share Repurchase Trends (\$ in Billions)



Capital Management (continued)

- Market focus shifted to capital adequacy
 - ▶ As one of the last resorts to stabilizing capital, dividends were cut

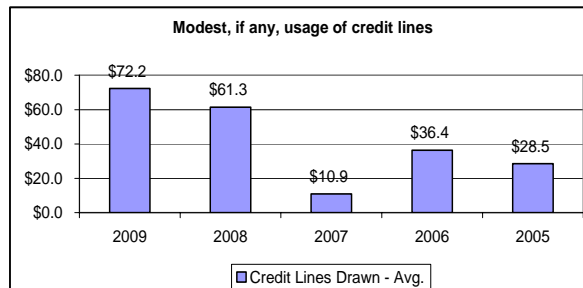
Proxy for Eight Large Cap Life Insurers - Common Dividend Trends (Number of Companies Adjusting Common Dividends)

2008			2009		
Flat	Up	Down	Flat	Up	Down
2	2	4	1	4	3

Capital Management (continued)

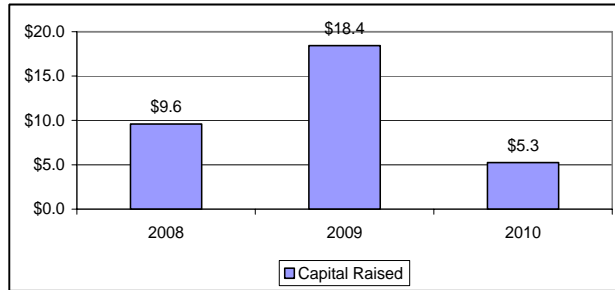
- Thanks to thawing of capital markets in April 2009, the least preferred choice of capital by insurers was barely utilized during the crisis.

Proxy for Eight Large Cap Life Insurers - Sources of Liquidity (\$ in million)

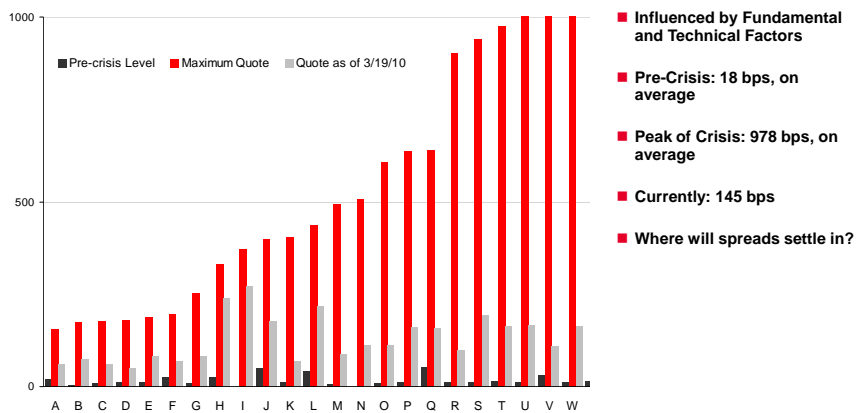


Capital Management (continued)

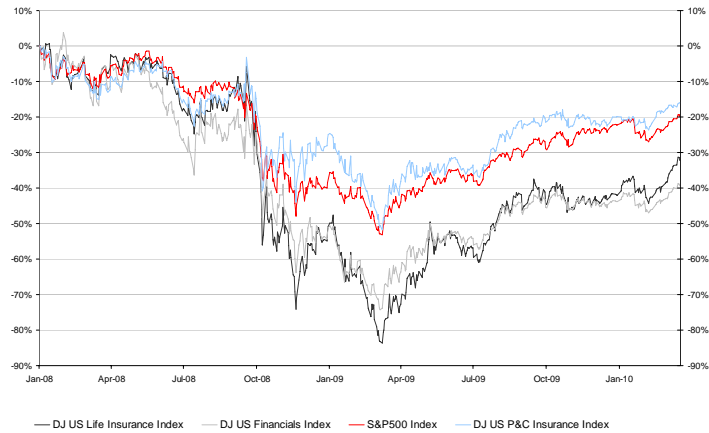
Proxy for Eight Large Cap Life Insurers - Capital Raising Efforts
(Common Equity, Pfd., Jr Subordinated Debt, Sr. Debt, \$ in Billions)



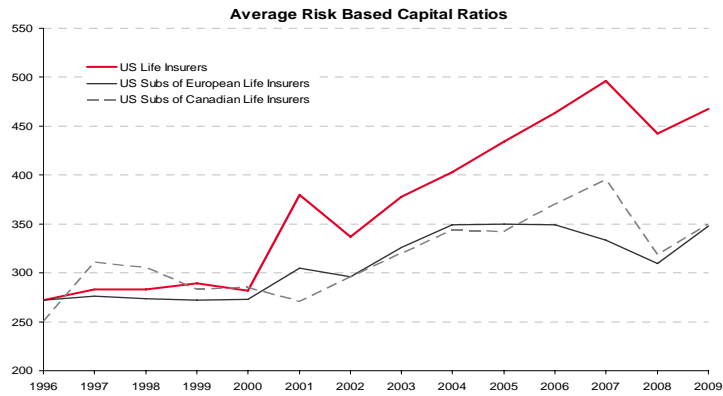
CDS Prices as of March 19, 2010



Insurance Indices as of March 19, 2010



Insurance Indices as of March 19, 2010



Source: SNL Financial

Contact Information and Bio



Alfred Capra
212-278-7507
alfred.capra@sgcib.com

Alfred M. Capra joined Société Générale's Financial Institutions Group in 2006 as a Managing Director dedicated to the firm's U.S. insurance clients. He started his career in 1990 at Salomon Brothers, and in 1992 became a sell-side equity research analyst following the insurance sector. Over the next 13-plus years he followed the insurance industry as a sell-side analyst at several investment banking firms, most recently at Oppenheimer & Co, Inc. During Mr. Capra's tenure as an analyst, he was recognized by StarMine as a top-ranked stock-picker and was also a member of the Salomon Brothers' life insurance research team which achieved top-rankings by Institutional Investor Magazine. He holds a B.S. in Financial Management, and an MBA with a concentration in Banking and Finance.

Disclaimer

Important Information

IMPORTANT DISCLAIMER: The information herein is not intended to be an offer to buy or sell, or a solicitation of an offer to buy or sell, any securities and including any expression of opinion, has been obtained from or is based upon sources believed to be reliable but is not guaranteed as to accuracy or completeness although Société Générale ("SG") believe it to be clear, fair and not misleading. SG, and their affiliated companies in the SG Group, may from time to time deal in, profit from the trading of, hold or act as market-makers or act as advisers, brokers or bankers in relation to the securities, or derivatives thereof, of persons, firms or entities mentioned in this document or be represented on the board of such persons, firms or entities. Employees of SG, and their affiliated companies in the SG Group, or individuals connected to them, other than the authors of this report, may from time to time have a position in or be holding any of the investments or related investments mentioned in this document. Each author of this report is not permitted to trade in or hold any of the investments or related investments which are the subject of this document. SG and their affiliated companies in the SG Group are under no obligation to disclose or take account of this document when advising or dealing with or for their customers. The views of SG reflected in this document may change without notice. To the maximum extent possible at law, SG does not accept any liability whatsoever arising from the use of the material or information contained herein. This document is not intended for use by or targeted at private customers. Should a private customer obtain a copy of this report they should not base their investment decisions solely on the basis of this document but must seek independent financial advice.

www.sgcib.com

Copyright: The Société Générale Group 2009. All rights reserved.



Liquidity Risk Discussion for Society of Actuaries Investment Symposium

March 23, 2010

Agenda

- ▶ Executive summary
- ▶ Banking sector liquidity risk regulation
- ▶ Key principles outlined in US interagency guidance
- ▶ Liquidity risk stress testing
- ▶ Sample market and idiosyncratic stress events
- ▶ Sources and uses analysis
- ▶ Survival horizon analysis
- ▶ Liquidity risk for variable annuities (VAs)
- ▶ Liquidity risk profile of hedging instruments
- ▶ Liquidity risk identification in VAs
- ▶ VA case study: bull market scenario
- ▶ Carry on liquid assets = insurance premium for liquidity

Executive summary

▶ Regulation

- ▶ Significant increase in global banking liquidity regulation

▶ Stress testing

- ▶ Cash flow stress testing is core to regulation and leading banking industry practice
- ▶ Stress testing can be used to size maximum cash outflows (MCO) over adverse scenarios
- ▶ Banking practice is applicable to insurance products

▶ Liquid asset portfolio

- ▶ MCO can be used to determine the cash and liquid assets a company should hold to pre-fund for potential stress events

▶ Liquidity insurance

- ▶ The cost of carry associated with the liquid assets can be conceptually thought of as a liquidity insurance premium

Banking sector liquidity risk regulation

- ▶ **Increasing global liquidity risk regulatory requirements**
 - ▶ Initial regulatory guidance issued in response to the crisis was largely principles based outlining the overall management framework, stress testing and transfer pricing
 - ▶ More recent guidance has been increasingly more prescriptive of stress testing methodology and scenarios
- ▶ **Basel Committee on Banking Supervision**
 - ▶ Initial guidance released in June 2008 was principles based
 - ▶ Recent consultative paper released in December 2009 built upon principles from prior guidance and provides prescriptive guidance to measurement metrics
 - ▶ Comment period extends through mid-April 2010
- ▶ **UK Financial Services Authority (FSA)**
 - ▶ Mix of rules-based and principles-based guidelines
 - ▶ Rules on self-sufficiency and modifications
 - ▶ Significant reporting requirements
- ▶ **US interagency guidance: FDIC, FRB, NCUA, OCC and OTS**
 - ▶ Principles-based approach to liquidity risk management released March 17, 2010

Key principles outlined in US interagency guidance

1. Governance

- ▶ Role of the Board
- ▶ Role of Senior Management
- ▶ Role of Individuals/Committees

2. Strategies/Policies

- ▶ Liquidity and funding strategies
- ▶ Documented and approved policies
- ▶ Limits and planning

3. Measurement and Monitoring

- ▶ Cash flow projections
- ▶ Stress testing
- ▶ Collateral position management
- ▶ Management reporting
- ▶ Monitoring liquidity across legal entities

4. Intraday Liquidity

- ▶ Strategy and policy
- ▶ Ability to mobilize collateral
- ▶ Ability to prioritize obligations



5. Diversity of Funding Sources

- ▶ Funding strategy and policy
- ▶ Funding plans and market access
- ▶ Alternative sources of funding

6. Liquidity Pool

- ▶ Adequate levels of highly liquid assets
- ▶ Sizing of pool based on stress testing

7. Contingency Funding Plans

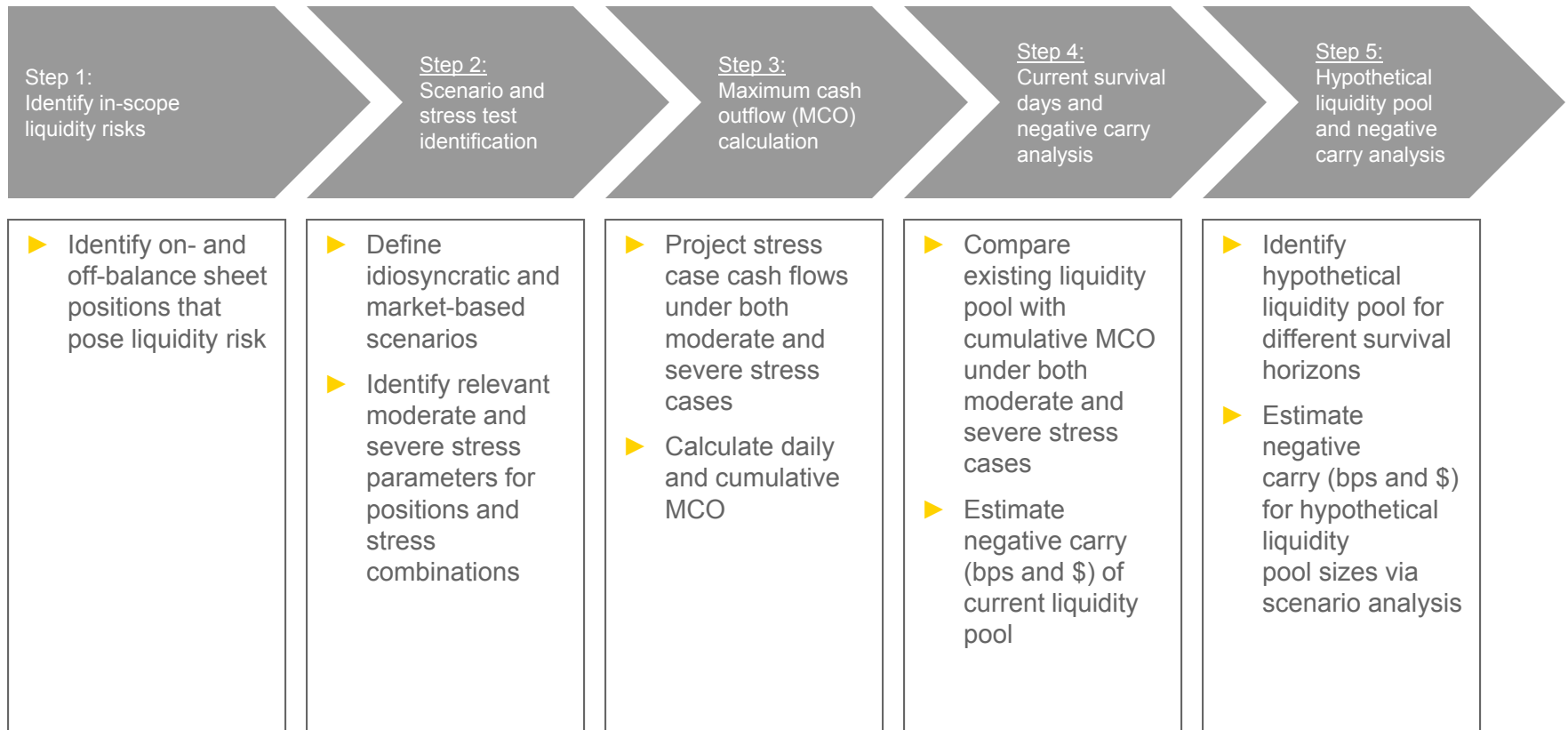
- ▶ Formally documented CFP
- ▶ Contingent liquidity events
- ▶ Early warning triggers
- ▶ Liquidity event management process

8. Internal Controls

- ▶ Internal control documentation
- ▶ Internal audit review

Agencies: Federal Deposit Insurance Corporation (FDIC); Board of Governors of the Federal Reserve System (FRB); National Credit Union Administration (NCUA); Office of the Comptroller of the Currency, Treasury (OCC); and Office of Thrift Supervision, Treasury (OTS)

Liquidity risk stress testing



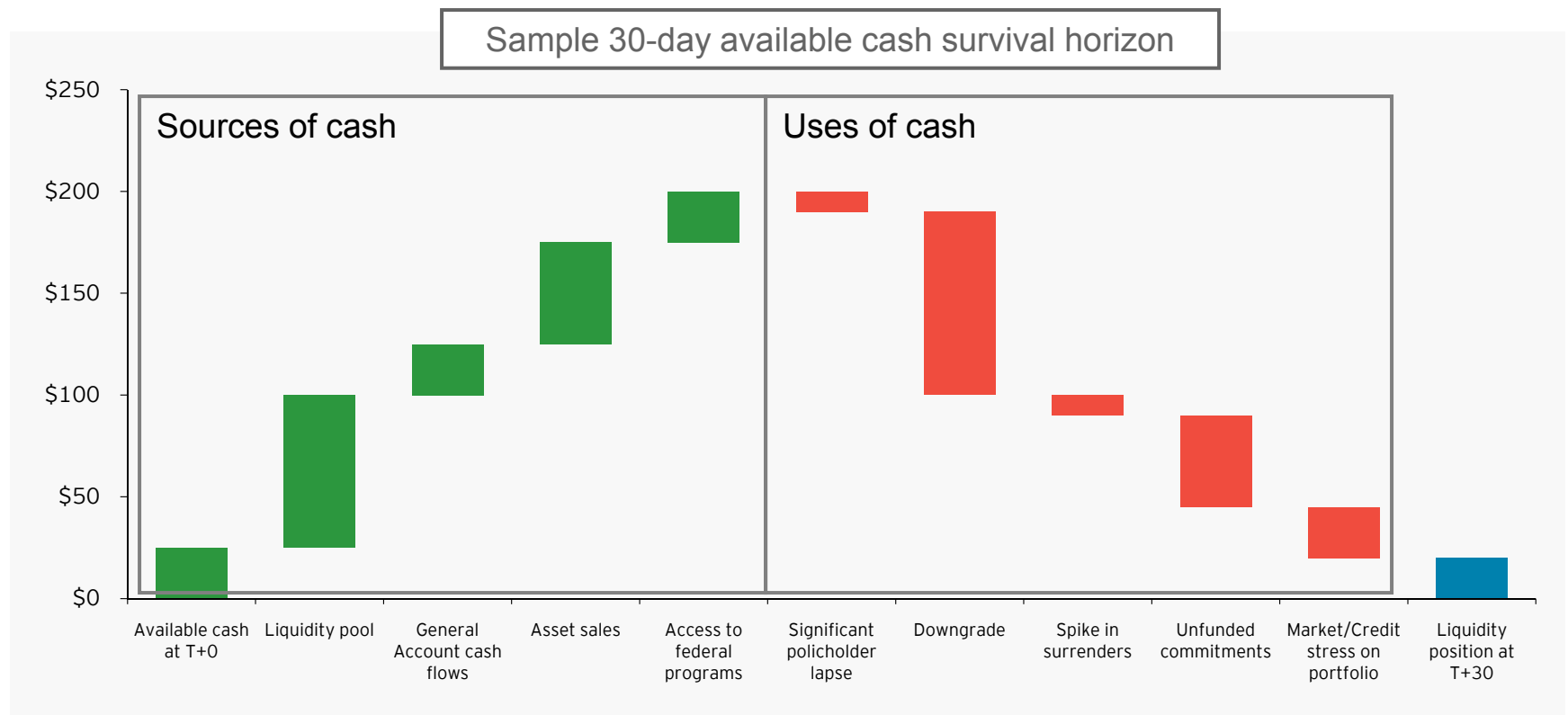
Data is analyzed by management to determine targeted survival horizons and liquidity pool size for required stress cases and associated coverage ratios

Sample market and idiosyncratic stress events

	Market stress events	Idiosyncratic stress events
Traditional banking	<ul style="list-style-type: none"> ▶ Systemic disruption to capital markets <ul style="list-style-type: none"> ▶ No access to secured debt markets ▶ No access to unsecured debt markets ▶ Market-wide shocks <ul style="list-style-type: none"> ▶ Equity markets ▶ Foreign exchange ▶ Commodities 	<ul style="list-style-type: none"> ▶ Adverse customer behavior <ul style="list-style-type: none"> ▶ Run-on-the-bank deposit withdrawals ▶ Increased draws on unfunded commitments ▶ Default of a significant counterparty
Shared	<ul style="list-style-type: none"> ▶ Market-wide shocks <ul style="list-style-type: none"> ▶ Interest rates ▶ Credit default swaps ▶ Loss of confidence in financial industry <ul style="list-style-type: none"> ▶ Increased market volatility ▶ Sovereign debt crisis or default 	<ul style="list-style-type: none"> ▶ Downgrade of long-term or short-term debt rating <ul style="list-style-type: none"> ▶ Two- to three-notch downgrade ▶ Widening of credit spreads ▶ Significant operational loss ▶ Reputational damage
Insurance specific	<ul style="list-style-type: none"> ▶ Catastrophic event ▶ Pandemic 	<ul style="list-style-type: none"> ▶ Higher than expected policy surrenders/lapses ▶ Significant policyholder surrender ▶ Mispriced or mishedged product with guarantees or options

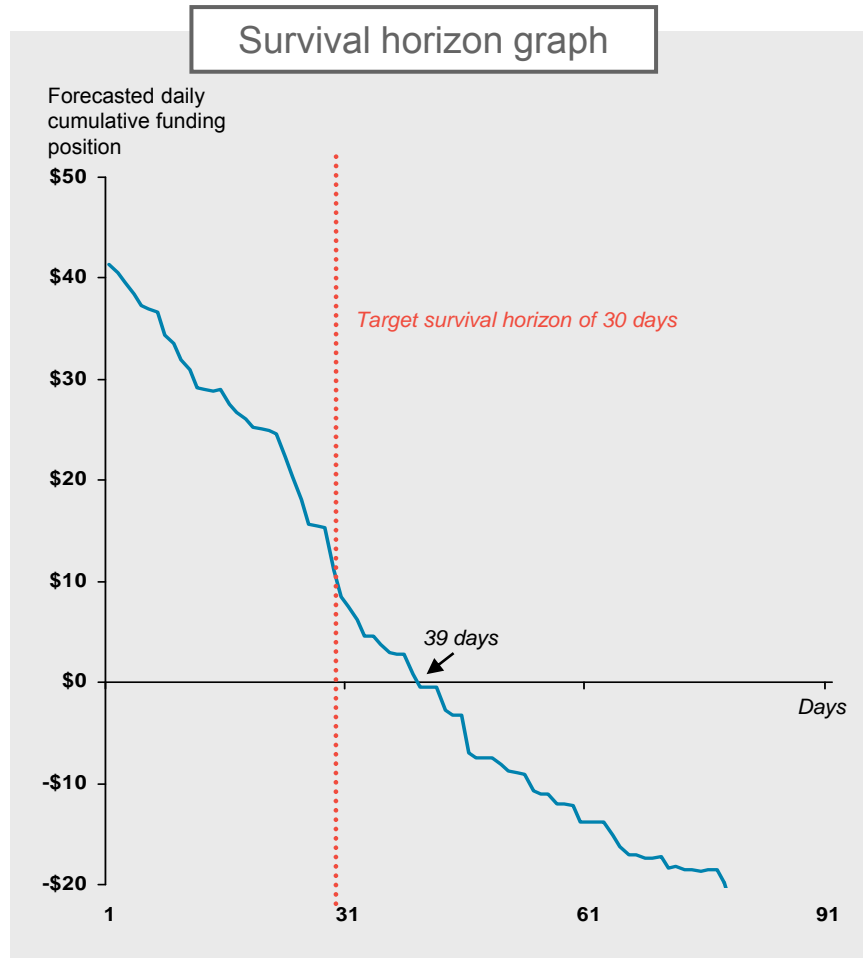
Sources and uses analysis

In order to ensure an ability to meet current debt obligations, as well as other potential expenses or capital requirements, companies perform a solvency assessment to determine whether sources of cash are sufficient to cover potential uses of cash under a stressed set of scenarios over a given time horizon.



Survival horizon analysis

Severe short-term	
Stress summary	<ul style="list-style-type: none"> ▶ Inability to access unsecured and secured markets ▶ Two-notch downgrade to long-term debt rating ▶ Increased draws on unfunded commitments ▶ Customer behavior <ul style="list-style-type: none"> ▶ 10% withdrawal of core deposits ▶ 20% of non-core deposits ▶ 10% lapse of insurance products ▶ Adverse market shocks over one month <ul style="list-style-type: none"> ▶ In one month: 10% decline in USD ▶ Immediate: +200 bps increase to interest rates
Managerial response	<ul style="list-style-type: none"> ▶ Monetize liquidity pool ▶ Access committed lines of credit ▶ Monetize other unencumbered assets ▶ Balance sheet reduction



Liquidity risk for variable annuities (VAs)

VAs

- ▶ During the severe market downturn in 2008, VAs caused or exacerbated many insurers' capital problems
- ▶ The strong market recoveries in 2009 also created liquidity problems for some insurers, due to large losses in VA hedging programs. Some companies were forced to shut down or cut back their hedging programs
- ▶ Market rallies and/or volatility may cause unexpected spikes in variation margin
- ▶ Cash flow timing mismatches may occur resulting from hedges
- ▶ VA risk management is incomplete without considerations of liquidity and capital
- ▶ Downgrade to an institution's debt rating may cause additional cash outflow due to over-the-counter (OTC) derivative contract downgrade trigger provisions

Liquidity risk profile of hedging instruments

Instrument	Exchange-traded	OTC
Futures forwards swaps	High <ul style="list-style-type: none"> ▶ Initial funding requirements are low, potential funding requirements are high ▶ Daily margining requirements can create liquidity problem if the positions of the hedges go against the insurance company 	High <ul style="list-style-type: none"> ▶ Initial funding requirements are low, potential funding requirements are high ▶ Level of liquidity risk dependent on nature of collateral agreements with counterparty ▶ Low threshold, frequent valuation and rating downgrade trigger increased liquidity risk ▶ Counterparty default may be a liquidity and/or capital stress event
Options	Medium <ul style="list-style-type: none"> ▶ Option premiums are paid up-front, and are the most the company will lose ▶ Initial funding requirements are higher, but potential funding requirements are lower ▶ During very volatile markets, rolling options can become prohibitively expensive (e.g. premiums), and thus a significant drain on liquidity 	Medium <ul style="list-style-type: none"> ▶ Funding profile similar to exchange-traded ▶ Counterparty default may be a liquidity and/or capital stress event ▶ Lower price transparency: OTC options tend to be more expensive than exchange traded

Liquidity risk identification in VAs

Liquidity risks associated with VAs can arise in both bull market and bear market scenarios.

Sources of liquidity risks to insurer		
Scenario	VA guarantees	Hedge positions
Bull market	<ul style="list-style-type: none"> ▶ Fair value gains on liabilities not realized as cash 	<ul style="list-style-type: none"> ▶ Market risk: mark-to-market cash outflows on hedge losses ▶ Idiosyncratic risk: possible margin and collateral requirements triggered by insurer's own rating downgrade during bull market, when hedges are in losing positions ▶ Counterparty default is a liquidity risk for OTC instruments as well
Bear market	<ul style="list-style-type: none"> ▶ Risk based capital (RBC) shortfall triggers capital injection <ul style="list-style-type: none"> ▶ Liquidity impact to parent at annual statutory filing date ▶ Immediate liquidity impact to parent in extreme bear markets ▶ Asset shortfalls relative to guarantees <ul style="list-style-type: none"> ▶ Liquidity impact contingent on policyholder death, behaviors and effectiveness of hedging program 	<ul style="list-style-type: none"> ▶ Counterparty risk for OTC hedges: if the insurer has to write-down the value of hedged assets due to counterparty default, it will weaken the company's capital position

VA case study: bull market scenario

- ▶ VA with GMAB (return of premium), sold on March 31, 2009 \$100 million initial deposit, all invested in S&P
- ▶ Dynamically delta hedged using one-month S&P futures, rebalanced monthly
- ▶ Hedging profit and loss:

All figures in \$ 000s

Date	S&P level	PV claims	G/L on liabilities	G/L on futures	Net G/L
3/31/2009	797.87	22,602			
4/30/2009	872.81	20,267	2,335	(2,486)	(151)
5/31/2009	919.14	18,955	1,312	(1,354)	(42)
6/30/2009	919.32	18,938	16	(5)	11
7/31/2009	987.48	17,170	1,768	(1,854)	(86)
8/31/2009	1,020.62	16,364	805	(805)	0
9/30/2009	1,057.08	15,523	841	(841)	0
10/31/2009	1,036.19	15,961	(438)	455	17
11/30/2009	1,095.63	14,652	1,310	(1,345)	(35)
12/31/2009	1,115.10	14,227	425	(400)	25
Total:			8,374	(8,635)	(261)

PV of liabilities go down, but doesn't generate cash

Real cash outflow!

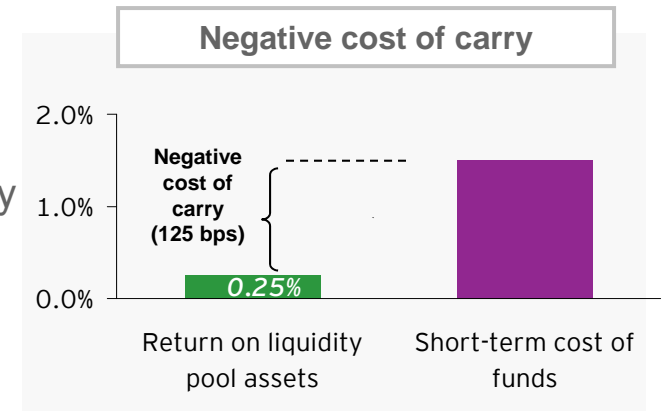
Due to hedging, the insurer is largely immune to the direction of market change on a PV basis

- ▶ Market risk vs. liquidity risk
 - ▶ Hedging largely reduced market risks, but can pose a liquidity risk to the company

Carry on liquid assets = insurance premium for liquidity

Funds transfer pricing process for liquidity

There is significant cost to the firm associated with holding cash and other highly liquid, unencumbered securities as part of the liquidity pool. The corporate functions and treasury should not bear the negative cost of carry, but rather pass the expense back to the business areas that drive the liquidity need.



Three-step process

1. Assess the negative cost of carry of holding an excess liquidity pool
 - ▶ Cash and other highly liquid securities offer low rates of return
 - ▶ The cost of funds to support the assets is typically greater than the returns on the liquidity pool assets
2. Identify and calculate the business areas that drive the need to hold the liquidity pool
 - ▶ Leverage the liquidity risk management process and stress testing for identifying potential liquidity needs at the business unit level
 - ▶ Address data challenges in calculating liquidity needs at the required level of granularity
3. Allocate net expense of liquidity pool to the business areas based on potential liquidity need

Ernst & Young

Assurance | Tax | Transactions | Advisory

About Ernst & Young

Ernst & Young is a global leader in assurance, tax, transaction and advisory services. Worldwide, our 144,000 people are united by our shared values and an unwavering commitment to quality. We make a difference by helping our people, our clients and our wider communities achieve their potential.

Ernst & Young refers to the global organization of member firms of Ernst & Young Global Limited, each of which is a separate legal entity. Ernst & Young Global Limited, a UK company limited by guarantee, does not provide services to clients. For more information about our organization, please visit www.ey.com

Ernst & Young LLP is a client-serving member firm of Ernst & Young Global and of Ernst & Young Americas operating in the US.

Ernst & Young is a leader in serving the global financial services marketplace

Nearly 30,000 Ernst & Young financial services professionals around the world provide integrated assurance, tax, transaction and advisory services to our asset management, banking, capital markets and insurance clients. In the United States, Ernst & Young LLP is the only public accounting firm with a separate business unit dedicated to the financial services marketplace. Created in 2000, the New York City-centered Financial Services Office today includes more than 3,300 professionals in over 30 locations across the US, as well as in Bermuda, the Bahamas and the Cayman Islands.

Ernst & Young professionals in our financial services practices worldwide align with key global industry groups, including Ernst & Young's Global Asset Management Center (based in London), Global Banking & Capital Markets Center and Global Insurance Center (both based in New York), which act as hubs for sharing industry-focused knowledge on current and emerging trends and regulations in order to help our clients address key issues. Our practitioners span many disciplines and provide a well-rounded understanding of business issues and challenges, as well as integrated services to our clients.

With a global presence and industry-focused advice, Ernst & Young's financial services professionals provide high-quality assurance, tax, transaction and advisory services, including operations, risk and technology, to financial services companies worldwide.

It's how Ernst & Young makes a difference.

About Ernst & Young's Insurance and Actuarial Advisory Services

Ernst & Young's North American Insurance and Actuarial Advisory Services (IAAS) practice includes 175 professional staff throughout the United States, Mexico, Bermuda and Canada. IAAS helps clients address risk, reporting, capital management, merger and acquisition due diligence and integration, retirement income and actuarial department transformation issues, and provides insurance risk management and claims advisory services.

www.ey.com/us/actuarial

© Ernst & Young LLP.

All Rights Reserved.

This publication contains information in summary form and is therefore intended for general guidance only. It is not intended to be a substitute for detailed research or the exercise of professional judgment. Neither EYGM Limited nor any other member of the global Ernst & Young organization can accept any responsibility for loss occasioned to any person acting or refraining from action as a result of any material in this publication. On any specific matter, reference should be made to the appropriate advisor.

1003-1141981 NY

Liquidity Risk and Institutional Spread Lending Society of Actuaries' 2010 Investment Symposium

Martin le Roux, CFA, FSA
Head of Risk Management – ING Financial Products
martin.le.roux@inginvestment.com
March 23, 2010

RETIREMENT - INSURANCE - INVESTMENTS



Your future. Made easier.®

Institutional Spread Lending – Background

- Plain-vanilla “debt-like” contracts issued to institutional buyers
 - Traditional GICs: stable value GICs sold to defined contribution pension plans; “muni” GICs (debt reserve funds)
 - Short-term funding agreements (FAs) sold to 2(a)7 money-market funds
 - FA-backed MTNs (FANIPs)
 - FHLB advances collateralized by eligible mortgage-backed securities
 - Collateralized short-term debt (securities lending and reverse repos)
- Bullet maturities, fixed- or floating-rate liabilities
- Proceeds invested in fixed-income portfolios
 - “Operating leverage”, not “financial leverage”
- Profitability depends on underwriting credit risk
 - Insurer needs to earn credit spreads in excess of its funding spreads; portfolio average credit rating is typically lower than insurer’s own rating
 - Implicitly supported by insurer’s other business lines
- Issuers may also choose to underwrite liquidity risk
 - Some exposure to contractholder withdrawal options

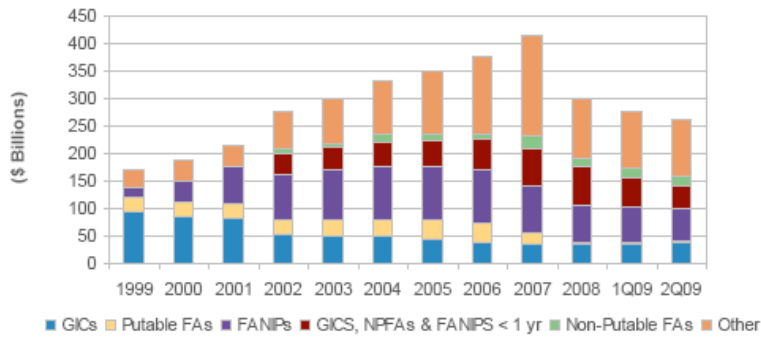


Your future. Made easier.®

Institutional Spread Lending – Liability Composition

Composition of Institutional Investment Products Liabilities 1999-2Q09

Total Nominal Liabilities at 2Q09 = \$260 billion



Source: Moody's



Your future. Made easier.®

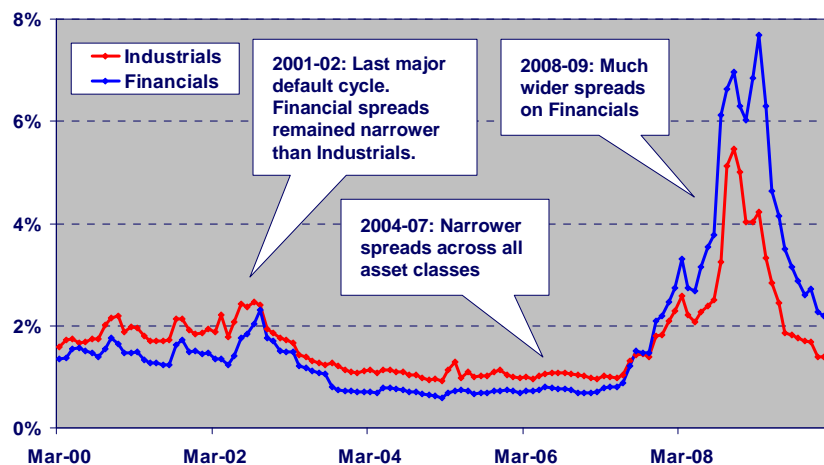
Institutional Spread Lending – Risks

- Asset-side credit risk
- Liquidity/rollover risk due to asset-liability cashflow mismatches
 - MTN liabilities can be highly "lumpy" (\$500mm+)
- Contractholder withdrawal/extension options
 - Minimal exposure to short-term puttable contracts (30 days or less) following General American collapse in 1999
 - Until recently, significant exposure to 13-month extendible MTNs (contractholder has rolling option to terminate with 12 months' notice)
 - Puttable/extendible liabilities are typically floating-rate
 - Traditional fixed-rate GICs (stable value, munis) have contractholder withdrawal options, but only in specific circumstances
- For collateralized liabilities: asset-side market value risk and asset downgrade risk
- Asset-liability interest rate mismatch risk



Your future. Made easier.®

Investment-Grade Corporate Bond Spreads March 2001 – March 2010 (source: Barclays Capital)



ING 
Your future. Made easier.®

Lessons from the 2008-09 Financial Crisis (1)

“When it comes to risk management during market crises, the usual economic linkages and historical market relationships do not matter. Rather, what matters is who owns what, who is under pressure to liquidate, and what else they own” – Richard Bookstaber

- High levels of asset defaults
 - Credit ratings turned out to be a poor indicator of default risk
 - Portfolio credit risk models underestimated systemic risk
- Asset-liability cashflow mismatches created major vulnerabilities
 - Almost all 13-month extendible MTNs were “non-extended”
 - Market for new MTN issuance completely dried up
 - Withdrawals from 2(a)7 money-market funds
 - Significant increases in liability funding spreads, e.g. 3ML+150 bps for short-term FAs (versus 5-10 bps pre-crisis)
- Asset sales only possible at depressed values
 - Some assets continued to trade above book, but only because of high fixed coupons

ING 
Your future. Made easier.®

Lessons from the 2008/09 Financial Crisis (2)

- Asset market values really matter
 - Affect investor confidence
 - Depressed MVs affect ability to sell assets in order to meet cashflow mismatches
 - Some assets have continued to trade above book, but only because of high fixed coupons
 - Collateralized funding capacity (FHLB, securities lending, reverse repos) affected by depressed MVs (and asset downgrades)
- Pro-cyclical regulatory and rating agency capital requirements
 - Asset downgrades and revisions to ratings criteria
 - Revisions to future asset default projections
 - High refunding costs
 - ALM mismatches due to asset sales
 - Insurer downgrades exacerbated liquidity problems



Your future. Made easier.®

Lessons from the 2008/09 Financial Crisis (3)

- Unexpected dependencies between different business lines
 - Variable annuity losses affected GIC refunding ability
 - Dependence on other business lines to meet cash shortfalls can create ALM issues
- Mortgage prepayment models gave unreliable cashflow forecasts
 - Borrowers' ability to refinance was compromised by low property values
- Unexpected risks from derivatives exposures
 - Counterparty credit risk (Lehman)
 - Liquidity risk due to collateral posting requirements
- Barriers to cash transfers between different legal entities within complex organizations



Your future. Made easier.®

Current conditions

- Maturing liabilities have been met by
 - Asset sales
 - Cash transfers from other business lines
 - Some liability issuance, but at generally elevated spreads
 - Collateralized liabilities (FHLB, reverse repos, securities lending)
 - Muni GICs (market previously dominated by AAA-rated monolines)
 - MTN market reopened in June 2009 (Metlife, Prudential, MassMutual, Hartford)
- Insurers have been raising capital
- Some insurers have announced plans to exit the IIP business



Your future. Made easier.®

Disclaimer

ING Investment Management disclaims responsibility for any private publication or statement by any of its employees. The opinions and views expressed herein are those of the author(s) and do not necessarily reflect those of the company.



Your future. Made easier.®