Is Actuarial Demand Cyclical?

James McPherson
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Hypothesis: By end of 2012 we will see global changes of a magnitude we have not seen in any of our lifetimes.
Global

World growth prospects

North America
2008: 1.1%
2009: -2.5%
2010: 2.3%

Western Europe
2008: 0.7%
2009: -4.2%
2010: 0.2%

Developing Asia
2008: 7.7%
2009: 6.2%
2010: 7.7%

World
2008: 2.9%
2009: -1.5%
2010: 2.9%

Source: National Statistics Offices, PwC Forecasts at 23 Sep 2009
G7 Richest Nations?

- Canada
- France
- Germany
- Italy
- Japan
- United Kingdom
- United States of America

- Argentina
- Australia
- Brazil
- China
- India
- Indonesia
- Mexico
- Russia
- Saudi Arabia
- South Africa
- South Korea
- Turkey

European growth prospects

<table>
<thead>
<tr>
<th>Country</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Euroland</td>
<td>0.7%</td>
<td>-4.4%</td>
<td>0.3%</td>
</tr>
<tr>
<td>Ireland</td>
<td>-3.0%</td>
<td>-9.2%</td>
<td>-2.0%</td>
</tr>
<tr>
<td>Spain</td>
<td>1.2%</td>
<td>-3.7%</td>
<td>-0.5%</td>
</tr>
<tr>
<td>UK</td>
<td>0.7%</td>
<td>-4.4%</td>
<td>0.6%</td>
</tr>
<tr>
<td>France</td>
<td>1.3%</td>
<td>-5.6%</td>
<td>1.0%</td>
</tr>
<tr>
<td>Germany</td>
<td>0.4%</td>
<td>-2.4%</td>
<td>0.9%</td>
</tr>
</tbody>
</table>

Source: National Statistics Offices, PwC Forecasts at 23 Sep 2009
Hypothesis: By end of 2012 we will see global changes of a magnitude we have not seen in any of our lifetimes.
Historic UK GDP Growth – Stable

Quarter-on-quarter change in real GDP (%)

Source: ONS
UK GDP Growth Forecasts

Year-on-year change in real GDP (%)

Source: ONS, PwC Forecasts as at 23 Sep 2009

UK Unemployment

Source: ONS
UK Unemployment % Change

Quarter-on-quarter change in unemployment vs real GDP (%)

Source: ONS

UK Household Savings Ratio

Savings ratio (%)

Source: ONS
UK Businesses Expectations

Source: Markit

Nov 2007 – Northern Rock

UK Public Sector Net Debt

Source: ONS. Excludes Northern Rock.
UK PwC Up-turn Index

- PwC up-turn index

![Graph showing up-turn index for various sectors]

Source: PwC analysis

UK Forecasts by Sector

Gross value added growth (% y-o-y)

![Graph showing forecasted gross value added growth for different sectors]

Source: PwC forecasts as of 23 September 2009. Corresponds to main scenario UK forecast.
UK Insurance – US has been a lead indicator

US Insurers Returns on Equity

Sources: ISO; A.M. Best; Insurance Information Institute.
US Net Written Premium Growth

Sources: A.M. Best (historical and forecast), ISO, Insurance Information Institute

Treasury Yield Curves

*Sept 2009.
Sources: Federal Reserve; Insurance Information Institute.
Gilts and Treasury Yield Curves

Comparative 2008 Inflation Statistics
Important to Insurers (%)

- Reinsurance Failure: 3.7%
- Sig. Change in Business: 4.2%
- Misc.: 9.1%
- Rapid Growth: 14.3%
- Affiliates: 7.9%
- Catastrophe Losses: 7.6%
- Alleged Fraud: 8.1%
- Deficient Loss Reserves/Inadequate Pricing: 38.1%
- Investment Problems: 7.0%
- Alleged Fraud: 8.1%
- Catastrophe Losses: 7.6%
- Rapid Growth: 14.3%
- Affiliates: 7.9%
- Investment Problems: 7.0%
- Sig. Change in Business: 4.2%
- Misc.: 9.1%


Impact on GI Actuaries
Actuarial Fellows & Associates

By Industry

Students - a Better Proxy?
Historic UK GDP growth vs Actuarial Growth

Source: ONS: Institute of Actuaries:
Assumes salary increase = read GDP
Has Actuarial Demand Been Cyclical?

![Graph showing actuarial growth and costs over time]

Source: ONS: Institute of Actuaries
Assumes salary increase = read GDP

Reducing Vulnerability
Test Question

Assume a fair £1 coin
Charles throws 99 heads in a row.

What is the probability the 100\textsuperscript{th} throw is tails?
Test Question

Assume a fair £1 coin
Charles throws 99 heads in a row.

What is the probability the 100th throw is tails?

Undercover test last evening – results later

Models: Getting the Balance Right

Incomplete Information

Facts

Assumptions
Models : Getting the Balance Right
Slide 2 of 3

![Bar chart showing Excess Capital and Regulatory Capital before and after, with Y for Commercial, Legal, and Compliant, and Y? for Moral.]

Models : Getting the Balance Right
Slide 3 of 3

![Bar chart showing Excess Capital and Regulatory Capital before and after, with Y? for Commercial, Y for Legal, N? for Moral, and Y for Compliant.]
Conclusion – Taking a Wider Perspective

In the midst of the changes hang onto to our value to society:
1. Help ensure valid claims can be paid
2. Ensure a fair price for the risk
3. Make money for shareholders
4. Help provide insurance

Attractive Models Can Distract

- Large sums spent on Cat modelling, little on liability aggregates
- Investments made on complicated models not on research in actual correlations
- New methods on reserve uncertainty, but little change to the data captured by claims handlers
Question or No Question

Choice –
- Ask a question
- Get asked a question