Possible Unintended Consequences of Basel III and Solvency II

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Institute and Faculty of Actuaries

Sessional Research Meeting, London

25 March 2013
Agenda

• Similarities and differences between
  – Banks and insurers
  – Basel III and Solvency II

• Possible unintended consequences of Basel III and Solvency II


Views expressed are those of the authors, not necessarily those of the IMF or IMF policy
Overview of paper

• Basel III (globally active banks) and Solvency II (all EU insurers)
  – Both well advanced and have much in common
  – But different histories, driving forces and business models of industries being regulated lead to substantive differences in detail
  – Substantially independent development but largely coincident implementation timing

• Paper seeks to engage financial and regulatory community to consider possible unintended consequences, including:
  – Cost of capital
  – Funding patterns and interconnectedness
  – Product and/or risk migration

• Paper focuses mainly on Pillar 1 aspects (minimum capital requirements)
## Typical bank and insurer business models differ

<table>
<thead>
<tr>
<th></th>
<th>Banks</th>
<th>Insurers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Monetary role industry</strong></td>
<td>A means of payment in exchange for goods and services</td>
<td>A store of value, permitting deferred consumption and smoothing</td>
</tr>
<tr>
<td><strong>mainly fulfils</strong></td>
<td></td>
<td></td>
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<tr>
<td><strong>Other roles</strong></td>
<td>Financial services</td>
<td>Risk pooling</td>
</tr>
<tr>
<td><strong>Comparative advantage</strong></td>
<td>Screen and finance short-term projects</td>
<td>(as investors) invest long-term and gain from illiquidity premium</td>
</tr>
<tr>
<td><strong>Core business activities</strong></td>
<td>Largely asset-driven, often supported by leveraged balance sheets</td>
<td>Mainly liability-driven, less leveraged and often less exposed to ‘runs’</td>
</tr>
<tr>
<td><strong>Exposure to systemic risk from any one firm?</strong></td>
<td>Higher</td>
<td>Lower</td>
</tr>
<tr>
<td><strong>Risk that safety net costs fall on government?</strong></td>
<td>Higher (more ‘essential’ to current economic activity)</td>
<td>Lower</td>
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</tbody>
</table>
Although noteworthy overlaps (and conglomerates!)

- Investment / savings products, e.g.:
  - Investment bonds
  - Term deposits offered by banks
  - Term-certain annuities offered by insurers

- Protection products
  - Investment guarantees and options written by investment banks versus variable annuities written by insurers
  - CDSs written by both banks and insurers
  - Trade finance offered by banks and surety bonds offered by nonlife insurers

- Differences in tax and capital treatment create product and capital arbitrages
Different funding bases (excluding equity)

- Banks more interconnected (at individual firm level)
Different capital levels

<table>
<thead>
<tr>
<th></th>
<th>Average total capital / total assets (%)</th>
<th>% of ‘high-quality’ core capital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large European banks</td>
<td>6</td>
<td>67</td>
</tr>
<tr>
<td>Large insurers (worldwide)</td>
<td>8</td>
<td>84</td>
</tr>
<tr>
<td>Large global reinsurers</td>
<td>15</td>
<td>73</td>
</tr>
</tbody>
</table>

• N.B. Ideally comparison should adjust for risk, e.g. by reference to VaR at the same confidence level and time horizon
## Different accounting bases

<table>
<thead>
<tr>
<th></th>
<th><strong>Banks</strong></th>
<th><strong>Insurers</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assets</strong></td>
<td>Often IFRS, bank loans deemed financial instruments, IAS 39, loan provisioning generally retrospective, IFRS 9 amortised cost or fair value</td>
<td>Solvency II uses market consistent, i.e. fair, values (and less reliance on general purpose accounting)</td>
</tr>
<tr>
<td><strong>Liabilities</strong></td>
<td>Also typically at amortised cost or fair value</td>
<td>Transfer/settle cost, approximated by best estimate + risk margin or MV of replicating portfolio, more prospective</td>
</tr>
<tr>
<td><strong>Own credit risk</strong></td>
<td>Basel III will effectively disallow benefit previously available under Basel II</td>
<td>No</td>
</tr>
</tbody>
</table>

- More retrospective (hence stable in the short term) for banks than insurers
- Relevant to design of counter-cyclical elements
- Although counter-cyclical versus what?
Different perspectives on Pillar 1 versus Pillar 2

- Insurers often pay less attention to Pillar 1 and more attention to Pillar 2 than banks
  - Banks are currently more capital constrained than insurers on a Pillar 1 basis
  - C.f. UK perspective on ICA (Pillar 2) versus Pillar 1 (although please note that paper has an international rather than a merely UK focus)

- Banks often enjoy liquidity underpins from their central bank
  - Part of the deposit protection arrangements that have developed over the last century or so
Basel III capital requirements

Diagram:

Basel III Framework
- Pillar I (Capital Requirements)
  - Liquidity Risk
- Pillar II (Supervisory Review Process)
- Pillar III (Risk Disclosure and Market Discipline)

Capital (Tier I & Tier II)
- Credit
  - VaR
  - Standard
  - Incremental Risk Charge (IRC)
  - CCR Derivative Exposure
  - CEM
  - EPE
  - WWR
- Market
  - Standard
  - IMA
  - VaR
  - Stressed VaR
  - Incremental Risk Charge (IRC)
- Risk Weighted Assets (RWA)

Operational
- BIA
- AMA

Concentration
- Standard
Solvency II SCR: Standard Formula

- SCR
  - Adj
  - BSCR
    - Market
      - Interest rate
      - Equity
      - Property
      - Spread
      - Currency
      - Concentration
      - Illiquidity
    - Health
      - SLT Health
      - CAT
    - Default
      - Non-SLT Health
      - Premium Reserve
      - Lapse
    - Life
      - Mortality
      - Longevity
      - Disability Morbidity
      - Lapse
      - Expenses
      - Revision
    - Non-life
      - Premium Reserve
      - Lapse
    - Intang
      - CAT

*This colour reference is for screen presentations only*
## Basel III & Solvency II: Different histories, drivers

<table>
<thead>
<tr>
<th></th>
<th>Basel III</th>
<th>Solvency II</th>
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</thead>
<tbody>
<tr>
<td><strong>Underlying source</strong></td>
<td>Regulator(s) (BCBS)</td>
<td>EU Commission (c.f. CRD IV)</td>
</tr>
<tr>
<td><strong>Coverage</strong></td>
<td>Globally active banks</td>
<td>All EU insurers</td>
</tr>
<tr>
<td><strong>Legal status</strong></td>
<td>Must be transposed into local legislation</td>
<td>EU Directive</td>
</tr>
<tr>
<td><strong>Main drivers</strong></td>
<td>Refines Basel II in reaction to financial crisis</td>
<td>- Harmonised across Europe</td>
</tr>
<tr>
<td></td>
<td>- Raised capital requirements (and quality of capital)</td>
<td>- Principles-based regulatory framework</td>
</tr>
<tr>
<td></td>
<td>- Harmonised liquidity standards</td>
<td>- Risk-responsive capital requirements</td>
</tr>
<tr>
<td></td>
<td>- Capital buffer</td>
<td></td>
</tr>
<tr>
<td><strong>Transition period</strong></td>
<td>Relatively long</td>
<td>Shorter but growing</td>
</tr>
<tr>
<td><strong>Further reforms?</strong></td>
<td>E.g. BCBS reviewing trading book and securitisations</td>
<td>Broader in scope than Basel III, but still many details outstanding</td>
</tr>
</tbody>
</table>
Basel III and Solvency II capital tiering (Pillar 1) (1)

- Concepts are similar:
  - Primary role of capital to absorb unexpected losses
- Capital tiering:
  - Effectiveness of different types of capital in different situations
  - How reliable is valuation of remainder of balance sheet in stressed circumstances?
- Different types of capital
  - Some primarily absorb losses on going-concern basis
  - Some also absorb losses on gone-concern basis
Basel III and Solvency II capital tiering (Pillar 1) (2)

• Some differences justified given different business models
  – Ancillary Own Funds justified given lower exposure to runs?

• Others less easy to justify, including:
  – Tier 3 eliminated under Basel III
    – Tier 3 not in practice used much by insurers
  – Bail-in proposals
  – Treatment of dated instruments; Solvency II allows 10 year
  – Coupon cancellation and trigger levels
  – Treatment of expected future profits – banks only recognise if contractually committed
  – Intangibles, deferred tax assets, surplus in pension scheme
Basel III capital requirements

- **Globally**
  - QIS study 30 June 2011
  - Capital shortfall of €518 billion for 7% common equity target
  - LCR shortfall of €1.76 trillion (3% of total assets)
  - NSFR shortfall of €2.78 trillion

- **Locally**
  - Varies considerably by country
Basel III capital requirements

- Countercyclical Buffer
- Tier 2 Capital
- Hybrid Tier 1 Capital
- Capital Conservation Buffer
- Min Common Equity Capital

<table>
<thead>
<tr>
<th>Year</th>
<th>Basel II</th>
<th>Jan-11</th>
<th>Jan-12</th>
<th>Jan-13</th>
<th>Jan-14</th>
<th>Jan-15</th>
<th>Jan-16</th>
<th>Jan-17</th>
<th>Jan-18</th>
<th>Jan-19</th>
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<tbody>
<tr>
<td>2009</td>
<td>4%</td>
<td>4%</td>
<td>4%</td>
<td>3.50%</td>
<td>1%</td>
<td>4%</td>
<td>4%</td>
<td>4.50%</td>
<td>4.50%</td>
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<tr>
<td>2010</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
<td>1.50%</td>
<td>4.50%</td>
<td>4.50%</td>
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<td>2011</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
<td>3.50%</td>
<td>4%</td>
<td>4.50%</td>
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<td>2012</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
<td>2.50%</td>
<td>1.50%</td>
<td>4.50%</td>
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<td>2013</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
<td>1.50%</td>
<td>4.50%</td>
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<td>2014</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
<td>1%</td>
<td>1.50%</td>
<td>4.50%</td>
<td>4.50%</td>
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<td>2015</td>
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<td>2%</td>
<td>2%</td>
<td>1.50%</td>
<td>0.60%</td>
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<td>2%</td>
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<td>2%</td>
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<td>4.50%</td>
<td>4.50%</td>
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<tr>
<td>2017</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
<td>1.50%</td>
<td>1.30%</td>
<td>4.50%</td>
<td>4.50%</td>
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<tr>
<td>2018</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
<td>1.50%</td>
<td>1.90%</td>
<td>4.50%</td>
<td>4.50%</td>
<td>4.50%</td>
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<tr>
<td>2019</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
<td>2.50%</td>
<td>2%</td>
<td>4.50%</td>
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</table>
Calculation of required Pillar 1 capital (1)

• Both Basel III and Solvency II have risk-based approaches

• Basel III: same methodology as Basel II
  – No explicit probabilistic basis to define requirements
  – Standards considerably strengthened
  – Standardised approach or internal model
  – New requirements in respect of leverage and liquidity
  – Strengthens requirements for extreme value events

• Additional charges for systemically important financial institutions (SIFIs)
  – Not part of Solvency II as such
  – Being introduced by IAIS and Financial Stability Board
G-SIBs

• Global Systemically Important Banks
• 29 banks
• Too big to fail
  – Size, interconnectedness, complexity, lack of substitutability, global scope
• Negative externalities
  – Implicit support and moral hazard
• Aim is to reduce probability of failure and impact of failure
• Additional capital requirements of between 1% and 2.5%
• Will cost of additional capital be offset by lower funding costs?
Calculation of required Pillar 1 capital (2)

- Solvency II: absolute and minimum risk-based capital requirements
  - SCR and MCR
  - Explicit probabilistic basis (for SCR)
  - Standardised approach or internal model, stress tests
- ORSA (Pillar 2): serves several purposes, including model risk
- Greater public disclosure if SCR not covered, and more explicit deferral of payments on capital instruments qualifying for Tier 2
G-SIIs

- Global Systematically Important Insurers
- Views differ about appropriateness
  - “Little evidence.. traditional insurance generates.. systemic risk”
- Non-traditional insurance
  - Financial guaranty insurance, credit default swaps, derivatives trading
  - Variable annuities?
- Reinsurance considered as traditional insurance
- Indicators:
  - Size, global activity, interconnectedness, non-traditional activities, substitutability
Risk aggregation (Pillar 1)

• Basel III
  – Does not fully reflect importance of diversification or adequately penalise portfolio concentrations (“portfolio invariance”)
  – These features can instead be introduced by the supervisor
  – Some types of risk mitigation contracts recognised (mainly credit risk mitigation)

• Solvency II
  – Greater explicit recognition of diversification effects and risk interdependencies
  – Correlation matrices used
  – Virtually all types of risk mitigation contracts recognised
Possible unintended consequences

- Largely independent development processes
- Largely coincident implementation
- Could lead to unintended consequences:
  - Cost of capital
  - Funding patterns and interconnectedness
  - Product and/or risk migration
  - Other potential sources of arbitrage
- Requires empirical investigation beyond scope of paper
Cost of capital (1)

- Natural framework is Modigliani-Miller
  - Or rather why it doesn’t apply in practice
- General consensus is that changes will lead to higher costs for banks and will affect them more than insurers
  - Debt interest deductibility: Affects banks more, as banks rely more on debt financing and Basel III more focused on raising capital requirements
  - TBTF and implicit deposit protection underpin: Should affect (large) banks more, if Basel III successfully reduces funding subsidy
  - More scope for risk mitigation under Solvency II
  - Capital deductions more stringent under Basel III
  - Solvency II explicitly promoting use of internal models
Cost of capital (2)

• Although there are some arguments to the contrary
• Higher cost for insurers might arise because:
  – Changes could affect insurers more, as Solvency II is a more fundamental change
  – Greater cost for insurers if they needed to unwind undesired positions?
  – No/limited market for many insurance liabilities
• Again depends in part on importance of Pillar 1 versus Pillar 2 and extent to which firms are capital constrained
Funding patterns and interconnectedness (1)

- Solvency II could reduce demand for banks’ long-term instruments at a time when banks most need to issue them
  - Concern shared by regulators and market participants
- Solvency II standard formula SCR credit spread risk requirement depends (roughly proportionately) on rating and on duration
- EEA sovereign bonds (and equivalents) are zero rated irrespective of credit rating
- Basel III likely to affect banks’ demand for and supply of certain types of debt
  - Covered bonds favoured relative to unsecured
Funding patterns and interconnectedness (2)

• Although:
  – ‘Long-term’ for banks may differ from ‘long-term’ for insurers
  – Much insurance demand is liability driven (e.g. unit-linked, participating business)
  – Insurers are not the main buyers of bank senior unsecured and covered bonds
  – Changes in appetite lead to changes in price, hence another take on cost of capital?

• Basel III prompting new hybrid structures
  – Closer to equity
  – Solvency II not encouraging such investments by insurers
  – Impact of Basel III on banks’ enthusiasm to hold each others’ debt
Banks’ debt funding sources by type of investor

Source: Adapted from Bhimalingam and Burns (2011)
Funding patterns and interconnectedness (3)

- Greater concern may be increased interconnectedness via other routes
  - E.g. both industries target the same assets
- Potentially increased demand from both for sovereign debt
  - Such instruments are viewed favourably by Pillar 1 of both frameworks
- Might be mitigated e.g. by insurer internal models
  - If they capture heterogeneity in credit risk across (EU) sovereigns
  - Standards for such models have yet to be fully defined
- Are insurers more likely to “herd” than banks?
- Less incentives for banks to own insurance companies
Risk / Product transfers (1)

- Activities where banks and insurers compete directly
- Term certain annuities can attract higher capital requirements than term deposits
  - Basel III liquidity requirements may reduce these disparities
- Equity investments can attract higher capital charges if held in banks than in non-life insurers
  - Conglomerates may move such assets between subsidiaries (if group level consolidation does not unwind effect)
  - Exacerbated by increased capital requirements being introduced by Basel III
Risk / Product transfers (2)

- Increased cost of capital and focus on risk management may result in increased risk transfer to customers
  - E.g. increased use of periodical re-pricing of annuities based on mortality experience
  - Shift from DB to DC, possible extension of Solvency II to pension funds
  - Possible impact on behaviour of ‘long-term’ investors

- Or migration away from both sectors
  - Through use of e.g. securitization, reinsurance, shadow banking
  - Replay of Basel II ‘originate and transfer’ business model?
  - Implications for transparency, oversight and ‘equivalence’ between jurisdictions
Policy considerations

• Communication needed between insurance and banking regulators
  – Potential need to expand regulatory perimeter
• Key challenge for Solvency II is approach to ‘equivalence’
• Bank safety nets may be impacted by increased issuance of covered bonds
• Public policy considerations if excessive risk transfer to customers
• Empirical investigation needed into magnitude of unintended consequences
Summary

• Substantially independent development but largely coincident implementation timing

• Introduces scope for unintended consequences such as:
  – Cost of capital
  – Funding patterns and interconnectedness
    – Including linkages via sovereign debt
  – Product and/or risk migration
    – Between banks and insurers, between both and their customers and to elsewhere

• Policy responses should be informed by further empirical investigation into magnitude of impact of unintended consequences