Systemic People Risk
The Final Frontier?

ESRC People Risk Seminar – 26th March 2014 Trinity College
Dr Patrick McConnell

Agenda
1. People Risk Losses
   - Operational Risk Loss data (BIS & ORX)
   - Operational Risk Losses due to People
   - 4Is Model
2. Systems Thinking
   - Systems Thinking
   - System of Systems
   - Systems Thinking – LIBOR
   - Systems Thinking – The Liquidity Crisis
   - Mortgage Securitization as a System
   - Systems Thinking – The Sub-Prime Crisis
4. People Risk
   - People Risk – The Sub-Prime Crisis
   - People Mapping – A Tool for managing People Risks
   - People Risk – Biases and Rationalizations
   - People Risk – Research Agenda and Questions
1. People Risk Losses

What are People Risk Losses?

And why are they important?

Operational Loss Data

- It is a stylised fact that Operational Risk Losses are very heavy tailed

- In study after study, >75% of loss value is in the tail

[Bank For International Settlements (BIS) www.bis.org]
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**Topic 1 Introduction**

**2001 - BIS QIS 2 Summary – Losses by Event Type**

- **Internal Fraud**: 17%
- **External Fraud**: 17%
- **Employment Practices and Workplace Safety**: 17%
- **Clients, Products and Business Services**: 14%
- **Damage to Physical Assets**: 7%
- **Business Disruption and System Failures**: 6%
- **Execution, Delivery and Process Management**: 5%
- **80% of loss “events” occur in just two areas**
  - Execution, Delivery and Process Management
  - External Fraud

**Over 80% of loss “value” incurred in just three areas**
- Execution, Delivery and Process Management
- Clients Product and Business Services
- External Fraud

**QIS reported that 1% of losses account for >75% of value - Not Changed**

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**ORX Data 2006-2011**

- **Large Number of Small Losses**
- **Small Number of very Large Losses**

**NOTE**

Changes between 2006-2010 and 2011 are NOT due to more losses but LARGER losses due to the fallout from the GFC

>77% of loss value in <0.5% of cases in 2011

ORX©

2012 ORX Report on Operational Loss Data www.orx.org

The Operational Riskdata eXchange Association (ORX) is a not-for-profit industry association dedicated to advancing the measurement and management of operational risk in the global financial services industry.
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Where are these losses happening?

- Very busy ORX Table BUT most losses due to People

<table>
<thead>
<tr>
<th>Gross losses by business line and event type - reported to ORX during the year 2011</th>
<th>ORX©</th>
</tr>
</thead>
<tbody>
<tr>
<td>C Billion</td>
<td>Corp. Finance</td>
</tr>
<tr>
<td>Internal Fraud</td>
<td>4</td>
</tr>
<tr>
<td>External Fraud</td>
<td>20</td>
</tr>
<tr>
<td>Employment Practices &amp; Workplace Safety</td>
<td>30</td>
</tr>
<tr>
<td>Clients, Products &amp; Business Practices</td>
<td>40</td>
</tr>
<tr>
<td>Disasters &amp; Public Safety</td>
<td>50</td>
</tr>
<tr>
<td>Technology &amp; Infrastructure Failures</td>
<td>60</td>
</tr>
<tr>
<td>Execution, Delivery &amp; Process Risk</td>
<td>70</td>
</tr>
<tr>
<td>Total</td>
<td>80</td>
</tr>
<tr>
<td>% of Total</td>
<td>90</td>
</tr>
</tbody>
</table>

- 65% in the category ‘Clients, Products & Business Practices’ i.e. mainly *Fines* for bad practice

Does not cover all losses!

- BIS/ORX only covers *Operational Risk Losses* for regulated banks
- Does *not* cover losses due to bad strategic decisions (e.g. RBS)
- Does *not* cover losses due to *credit risks* resulting from bad strategic decisions, e.g. Anglo Irish Bank (AIB), Washington Mutual, HBOS
- Does *not* cover losses suffered by non-banks
- Does *not* include fines in 2012-2013, e.g. LIBOR
- Not computed are losses aggregated by source of fines, e.g.:
  - PPI estimated total £22 billion to date
  - LIBOR estimated $5 billion and growing
  - LSE estimate total of all Conduct fines > £150 billion since GFC
  - Etc. Etc.
- In other words, the largest losses impact many firms across the Industry!
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Running Total of Large Conduct Fines end 2012

<table>
<thead>
<tr>
<th>Total Costs 2009-2012 (GBP bn)</th>
<th>Provisions and Contingent Liabilities as at 31 Dec 2012 (GBP bn)</th>
<th>Grand Total (GBP bn)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank of America</td>
<td>30.41</td>
<td>23.58</td>
</tr>
<tr>
<td>JP Morgan Chase &amp; Co</td>
<td>18.52</td>
<td>6.13</td>
</tr>
<tr>
<td>UBS</td>
<td>23.69</td>
<td>0.95</td>
</tr>
<tr>
<td>Citigroup, Inc</td>
<td>8.71</td>
<td>3.13</td>
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<tr>
<td>Lloyds Banking Group PLC</td>
<td>5.87</td>
<td>3.27</td>
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<tr>
<td>HSBC</td>
<td>4.03</td>
<td>2.22</td>
</tr>
<tr>
<td>Barclays PLC</td>
<td>3.06</td>
<td>2.00</td>
</tr>
<tr>
<td>Royal Bank of Scotland</td>
<td>1.73</td>
<td>2.51</td>
</tr>
<tr>
<td>Santander</td>
<td>2.70</td>
<td>1.44</td>
</tr>
<tr>
<td>Goldman Sachs</td>
<td>1.76</td>
<td>2.19</td>
</tr>
<tr>
<td><strong>Grand Total (GBP bn)</strong></td>
<td><strong>100.40</strong></td>
<td><strong>47.52</strong></td>
</tr>
</tbody>
</table>


More to Come
- LIBOR
- GFC Mortgages
- FX Manipulation???

The Safety Triangle

- Heavy tailed losses are familiar in Health & Safety (H&S)
- See Frank Bird’s Safety Triangle
- Approach in H&S
  - Reduce Incidents and, as a consequence, Fatal Accidents will fall
  - This works!
- But will such an approach work in Financial Industry?
  - If one salesperson doesn’t sell a PPI, will another also stop, and will the bank not be fined? Only if everyone stops!
  - If one trader does not manipulate LIBOR, will others also stop? Highly unlikely – probably the reverse!
  - If we stop one Rogue Trader, will that deter others? Evidence suggests otherwise, because their motivations not fraudulent!
The largest Operational Risk losses occur ACROSS the Financial Industry and are due to PEOPLE

Some Big Questions

1) Just why do People in the Financial Industry do the ‘wrong’ thing?
   • Such as LIBOR, Rogue Trading, Stupid Lending

2) And why do People in the Financial Industry tend to do the ‘wrong’ thing at the exactly the same time?
   • Such as LIBOR, PPI, GFC, Irish Banking Crisis

3) How do we get do People to do the ‘right’ thing, or, at least, not do the ‘wrong’ thing?
   • We have sort of an answer to (1)
     • ‘Bad’ Decision-making,
     • Lack of comprehensive ‘Risk Culture’
     • Lack of Individual Responsibility
   • We have part of the answer to (2)
     • Groupthink, Herding,
     • Ineffective Micro-Prudential Regulation and lack of Macro-Prudential Regulation
   • We have FEW answers to (3) – That is why we are here!
2. Systems Thinking

Systems Thinking

- **Systems Theory** was developed in the 1950s/60s and recognised that a "system":
  - Is a collection of parts (or subsystems) integrated to accomplish an overall goal;
  - Has input, processes, outputs and outcomes, with ongoing feedback among these various parts.
  - If one part [of the system] is removed, the nature of the system is changed.
  - A "system" is greater than the sum of its parts.

- An “Open System” is one that interacts with and is influenced by its environment.
  [Note: A “Closed system”, such as a clock, is one that does not interact with its environment.]

- Organizations, such as firms in the financial industry, are “Open Systems”, influenced by their environment: the industry, regulators and the economy in general.

- *This is particularly true when considering RISKS!*
There is a Focus on Micro-Prudential Regulation

- Banking Regulators, supervise
  - Multiple Banks that operate in
  - Multiple Markets in
  - Single Jurisdictions (e.g. OCC in the USA)

- Banking Regulators, supervise
  - Individual Banks that operate in
  - Multiple Markets and do business in
  - Multiple Jurisdictions (e.g. FINMA in Switzerland)

- Some Markets have a Market Regulator that supervises a part of a Market (e.g. CTFC for US traded derivatives)

- Some Markets have **NO** Market Regulator (e.g. Foreign Exchange, REPO)

- But **NOBODY** has the big picture
  (Note the BIS is a standards body NOT a regulator)
Some More Big Questions

1) Who exactly is minding the shop?
   - Such as regulating global Universal Banks e.g. UBS, JPMorgan, etc.

2) How do Financial Markets actually interact?
   - Such as the Global Credit and the Global Funding/Liquidity Markets

3) Who is looking after the ‘big picture’ i.e. ‘Systemic Risks’?
   - We have part of an answer to (1)
     - Home – Host regulation; in theory, FINMA regulates UBS everywhere
   - We have some idea of the answer to (2)
     - Derivatives
   - We have NO answers to (3) – but working on it

Systems Thinking – LIBOR (1980s- early 2000s)

- From the mid 1980s, the LIBOR Market was the mechanism for setting Benchmark rates for Inter-Bank Borrowing and Commercial Lending
- LIBOR also supported the small Interest Rate Swaps (IRS) market
People Risk
Systemic People Risk

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Systems Thinking – LIBOR (2000s onwards)

- The enormous growth of the IRS market meant that the Cart was soon pulling the Horse, and huge profits in the IRS market opened the door for manipulation

System of Systems

- The Global Financial Industry is in fact what is called a ‘System of Systems’

- A ‘System of Systems’ (SOS) consists of a number of Systems that have the following properties:
  1) Operational independence ✓
  2) Managerial independence ✓
  3) Evolutionary development ✓
  4) Emergent behaviour ?
  5) Geographic distribution ✓

- The markets that make up the Global Financial Industry satisfy those criteria!

- Emergent behaviours are actions that “cannot be localized to any single component of the system but instead produce effects that arise from the cumulative action and interactions of many independently acting components”
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**Systems of Systems are Difficult to Manage**

- Systems of Systems are difficult to manage/control because of
  - **Influences**: mechanisms by which one entity interacts with another in a way that changes the physical, informational, or emotional state of the other;
  - **Cascade effects**: the means by which influence and emergent effects are propagated throughout a system of systems;
  - **Epidemics**: occur when the number of constituents that are influenced [by cascade effects] increases at each step;
  - **Emergent composition**: mechanism by which the effects of autonomous entities are combined to produce configurations or patterns that cannot be expressed as a simple summation or combination of their parts;
  - **Emergent properties**: characteristics of a system that cannot be localized to a single independently acting constituent or to a small constant number of constituents; and
  - **Tight Coupling**: the more ‘closely connected’ the system(s), the more likely failures are to influence each other - resulting in a higher risk of accidents/disasters.


- **Complicated?** ; Remember how the seizing up of the REPO market caused a liquidity crisis that triggered the GFC.

**An Example of an Emergent Property**

- Over the past decade, global Investment Banks have started to evaluate the Credit Risks of Derivatives on a **NET** rather than a **GROSS** basis And also the major banks now agree to post **Collateral** on these Net differences.

  - Because the risk is **Net**, this has resulted in an enormous increase in the **Gross** value of derivatives traded between large banks, for example the Interest Rate Swaps (IRS) market in 2011 had a Gross value of over $300 trillion!


  - This situation is fine, until one of the main Swaps dealers becomes or threatens to become bankrupt, where the **Gross** value becomes important as counterparties start to ‘cherry pick’ swap contracts! (Example, Lehman, AIG)

  - The situation is also fine until Collateral starts to lose value and counterparties take a ‘Flight to Safety’ or alternatively ‘Pile in’ (e.g. the JPMorgan Whale)

  - Then problems Cascade and an Epidemic runs through the System of Systems
People Risk

Systems Thinking – The Liquidity Crisis – Pre GFC

Global Financial Industry

REPO Market

Short Term Interest Rates Markets

Long Term Credit Markets

Bank

Bank

Tightly Coupled Over Time

Minor Disruption

People Risk

What are People to do with this Meltdown?

- The Liquidity Crisis that was a trigger for the GFC (not the cause) and was caused by PEOPLE.

- **People** (mainly Investment Managers) decided to pull out of the REPO markets, because added-return on cash not worth the risk! **Perfectly Rational**! Here we are dealing with fractions of a basis point.

- **Traders** started to pull out of the Short Term Interest Rate (STIR) market because they were unable to hedge overnight, through the REPO market!


- **Treasurers** were having liquidity problems when STIR market started to dry up! (Lehmans, nearly everyone!)

- **Bankers** who had loaned on the assumption of a forever-liquid STIR market, could no longer fund their loans! (Northern Rock, HBOS, nearly everyone!)

- It was all down to **People who made the wrong assumptions and bad decisions**!
Who's to blame!

- It’s not a natural Disaster!
- It’s not the Economy!
- It’s not the Government!
- It’s not the Regulators!
- It’s not Technology!
- It’s not Process Breakdown!
- It’s not an Accident!
- Nor is it Deliberate!
- It’s not a calculated Risk!
- It’s not ……[Fill in the blanks]

- It’s People – Stupid!

- It’s Board directors who do not ‘oversee’
- CEOs who pursue their own arrogant, optimistic agendas with
- Senior Managers who are quite happy to ‘get with the program’ to placate
- Investors who only have short term horizons (‘pass the parcel’)
- It’s Staff who don’t ask questions
- And it’s Control functions interested in ticking boxes to placate
- Regulators, who are fighting the last war, for
- Governments whose ideologies trump reality

3. Systems Thinking - The Global Financial Crisis

An Example of Systemic People Risk
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**Mortgage Securitization in the USA**

- Although complicated, the system for creating Residential Mortgage Backed Securities (RMBS) worked very well for 75 years after the Great Depression *because of due-diligence*.

**Enter Derivatives in the early 2000s**

- An awful lot of People involved in the OTD system!

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4. People Risks
People Risk

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Systems Thinking – The Sub-Prime Crisis – Pre GFC

- US Mortgage Market
- Lenders
- Brokers
- Appraisers
- Due Diligence
- US RBMS Market
- Structurers
- Ratings Analyst
- Global Investment Market
- Investment Advisors
- Investment Managers
- Brokers
- Sales
- Sub-Prime Mortgage Market
- Lenders
- Brokers
- Appraisers
- Traders
- Structurers
- Ratings Analyst
- Global Derivatives Markets
- Traders
- Ratings Analyst
- Sales
- Global Derivatives Markets
- Traders
- Ratings Analyst
- Sales

The Sub-Prime Crisis – Examples of People Risks

- Injudicious lending & Adverse Selection
- MisSelling & Mortgage Fraud
- Injudicious lending & Adverse Selection
- Lack of Due Diligence
- Adverse Selection
- MisSelling & Mortgage Fraud
- Lack of Due Diligence & Adverse Selection
- Lack of Due Diligence & Conflicts of Interest
Post Glass Steagall – Even Tighter Coupling

- After the repeal of the Depression era Glass Steagall Act in 1999, barriers between retail and investment bankers were broken down.

- Even more Tightly Coupled, making Cascades & Epidemics more likely

People Risks

- Throughout the Sub-Prime Crisis, the People Risks were evident:
  - US Mortgage Market – many
    - Customers Lied
    - Brokers Lied and missold properties
    - Appraisers did not do their Due Diligence
    - Lenders loaned injudiciously and securitised risky loans (Adverse Selection).
  - RMBS Market – many
    - Structurers did not do their Due Diligence
    - Traders cherry picked securities (Adverse Selection)
    - Credit Risk Analysts did not do their Due Diligence and mis-rated sub-prime securities
  - CDO Market – many
    - Structurers did not understand CDO products
    - Credit Risk Analysts did not understand CDO products and mis-rated them
    - Sales did not understand CDO products and mis-sold them

- Throughout the System of Systems, the SAME People Risks were evident

More Big Questions?

- Some Questions
  - So why should someone lying about a loan in California, end up with a run on the Northern Rock bank in Newcastle, UK?
  - So why should a Credit Analyst mis-rating a CDO, cause AIG (the biggest re-insurer in the world) to have to be rescued?
  - So why should bad lending in Anglo Irish Bank cause the collapse of other Irish Banks?

- The answer has something to do with:
  - **Individuals**: bad decision-making and lack of individual responsibility;
  - **Influence**: one individual affects another, who affects another etc. - Groupthink;
  - **Cascades**: products/ideas become ‘flavour of the month’, Herding;
  - **Emergent properties**: everyone is seemingly making money – Golden Goose!
  - **Epidemics**: out-of-control very quickly – no one has any idea of what's happening;
  - **Tight Coupling**: Universal Banking and standardisation of legal contracts (ISDA);
  - **Inattention**: Nobody looking at the Big Picture (the System of Systems)

<table>
<thead>
<tr>
<th>People Risk</th>
<th>Systemic People Risk</th>
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</thead>
</table>

People Mapping – A Tool for Managing People Risk

- Process Mapping is widely used to identify information flows in industrial and business Processes

- What if we mapped the ‘interactions’ between People?

- Most People interacts with multiple other People as part of their work.

- All of these interactions have one or more ‘official purposes’
  - For example, to provide products, services, advice, information etc. etc.

- But **ALL** of these interactions also have the potential to be ‘inappropriate’
  - For Example, bullying, discrimination, undue influence, etc. etc.
  - **Hint**: think of all of the potential problems between Lecturers and Students?

- Having identified potentially inappropriate interactions (i.e. People Risks), by ‘People Mapping’, they can hopefully be Risk Managed.
Biases and Rationalizations

"Humans are not a rational animal, but a rationalizing one" \textit{Leon Festinger}

\begin{itemize}
  \item \textbf{Common Biases} \textit{evident in People Risk events}
    \begin{itemize}
      \item Overconfidence – No Problem - we have done it before!
      \item Groupthink – Everyone in the firm/industry agrees it is a good idea!
      \item Loss Aversion – We have to keep on track, we will bounce back!
      \item Attentional – Analysts told me that it’s the next big thing!
      \item Confirmation – We did it this way before and it worked!
      \item Planning Fallacy – What we are doing is unique, state of the art!
    \end{itemize}
  \end{itemize}

  Such Biases need to be challenged!

\begin{itemize}
  \item \textbf{Common Rationalizations} \textit{evident in People Risk events}
    \begin{itemize}
      \item Ubiquity – Everyone’s Doing it!
      \item Victimless Crime – No one is harmed by this!
      \item Distrust of Law – Regulations are out-of-date, Regulators don’t understand us!
      \item Temporary Use – We will do this until we get back on track!
      \item Just Desserts – We deserve this because …..[Fill in the blanks]!
      \item Economic Necessity – We need to do this because …..[Fill in the blanks]!
    \end{itemize}
  \end{itemize}

Such Rationalizations need to be challenged!
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Regulation – Different Levels

- **Macro-Macro Regulation**
  - e.g. ESMA

- **Macro-Prudential Regulation**
  - E.g. FSB, BIS
  - US Banking
  - UK Banking
  - German Banking

- **Micro-Prudential Regulation**
  - E.g. Fed, PRA

- **Micro-Micro Regulation**
  - E.g. FCA, CFPB

Note: ESMA NOT looking at People Risk!

People Risk

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Research Agenda

- We know People are bad at decision-making (Biases etc.)!

- But what causes a few People behaving badly to spread chaos through a whole system?

- Yes, we can *tell* People and Firms to conduct themselves better! *But will they?*

- And will that stop massive losses being generated in the complex, heterogeneous System of Systems called the Global Financial Industry?

- Andy Haldane and Robert May in “Systemic risk in banking ecosystems”
  
  "The rapid growth in the size and complexity of the derivatives market contributed importantly to the destabilizing dynamics of the system under stress during the recent financial crisis"

\[ \text{Growth + Complexity} = \text{Systemic Risk} \]
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GROWTH + COMPLEXITY

+ LACK OF INDIVIDUAL RESPONSIBILITY

+ UNCHALLENGED BIASES & RATIONALIZATIONS

= SYSTEMIC PEOPLE RISK

Postscript – Very Recent Paper

"Why the Federal Reserve Failed to See the Financial Crisis of 2008: The Role of “Macroeconomics” as a Sensemaking and Cultural Frame”, Fligstein N., Brundage J.S., Schultz M. Feb 2014

http://sociology.berkeley.edu/sites/default/files/faculty/fligstein/Why%20the%20Federal%20Reserve%20Failed%20to%20See%20the%20Crisis%20of%202008%20v%202.6.pdf

Method: Textual Analysis of Fed Open Market Committee (FOMC) minutes

Conclusion:

“Our [research] demonstrates quite clearly the power of culture in shaping actors’ ability to make sense of the external world.

The backgrounds of the participants [the FOMC], the words they use to frame their arguments, and the literal way they “measure” what is going on “out there” affect their interpretation and construction of reality.

While most sociologists would not find this very surprising, the fact that the group of experts whose job it is to make sense of the direction of the economy were more or less blinded by their assumptions about how reality works, is a sobering result.”

In other words, the Global Financial System is subject to People Risks!"
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Questions?

References

• Mc Connell P. J. (2008) "People Risk - Where are the Boundaries?" Journal of Risk Management in Financial Institutions, Vol. 1/4; September


• McConnell P. J. and Blacker K. (2013) "Systemic Operational Risk - Does it exist, and if so how do we regulate it?" Journal of Operational Risk, Vol 8 No 1 Spring


Other relevant Papers


• McConnell P. J. and Blacker K. (2012)'Systemic Operational Risk the UK payment protection insurance scandal" Journal of Operational Risk, Vol. 7/1 Spring pp 1-60
