Challenging the Innovation Paradigm
Consequences of Temporary Incompetence in the Financial Sector

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3. Case focus – the Collateralized Debt Obligation 1983-2008
4. Results
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   2. Why did they go under?
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5. The Innovation Paradigm - Four Myths
6. Challenging the Innovation Paradigm – Implications from the research project.
**Theories applied**

**Competence:** A capacity to act in a (professional) context

From Polanyi 1962

**Theories:**
- Competence (Michael Polanyi 1962)
- Unintended consequences. (Robert K. Merton 1936)
- Stakeholder theory (C. Freeman 1984)
“Innovation both destroys and enhances competence”¹
Stylised example of the theory

1: Tushman, Anderson 1986
When the context changes...

From competent

To incompetent
Professional competence includes an ability to make predictions, which turn out to be correct over a period of time.

Polanyi (1962) distinguishes two kinds of errors:
- professional predictions, which turn out to be mistaken, and
- unprofessional predictions, which are not only false but incompetent.

"Temporary Incompetence"
When an industry expert unwittingly makes prediction errors due to unnoticed change in the professional context.
Mistaken professional prediction

Weather forecast

Mistaken professional prediction
Greenspan did not perceive how the professional context had changed. He was *temporarily incompetent*.

"Recent regulatory reform, coupled with innovative technologies, has stimulated the development of financial products, such as asset-backed securities, collateral loan obligations, and credit default swaps, that facilitate the dispersion of risk."

December 17, 2009.
At Senate Committee hearing

"Those of us who have looked to the self-interest of lending institutions to protect shareholder's equity — myself especially — are in a state of shocked disbelief."
Questions and Data

Research questions:
What was the innovation volume 1980 – 2008?
What evidence of actors’ prediction errors can be found 1980 - 2008?

Data:
• 2,307 collateralized securities
• 1,772 US patent applications, EP documents, etc.
• 264 chapters in 6 editions of the Handbook of Mortgage-backed Securities (Fabozzi 1985-2006)
• Newspaper articles covering 1980 - 2008
# The Twelve most Innovative CDO-issuing banks

<table>
<thead>
<tr>
<th>Lead manager</th>
<th>NPD* %</th>
<th>Losses 2008</th>
<th>Half bankrupt or bailed out</th>
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<tbody>
<tr>
<td>1 Bank of America</td>
<td>35 %</td>
<td>$66Bn + $8.9 Bn settlement for predatory lending.</td>
<td></td>
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<tr>
<td>2 Societe Generale</td>
<td>21 %</td>
<td>€4.9 Bn write down caused by alleged fraudulent trader 2008.</td>
<td></td>
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<tr>
<td>3 Goldman Sachs</td>
<td>19 %</td>
<td>CDO Loss $4.3 Bn 2007. Accused of creating and selling CDOs, then betting against them. Settled for $4.9Bn bail-out in CDO-related case.</td>
<td></td>
</tr>
<tr>
<td>4 Citigroup</td>
<td>18 %</td>
<td>Bailed out by US Government Nov. 2008 via $20 Bn in direct investment and $306 Bn in guarantees.</td>
<td></td>
</tr>
<tr>
<td>6 Credit Suisse</td>
<td>16 %</td>
<td>Write down of $2.65 Bn due to overvaluation of CDOs in 2008</td>
<td></td>
</tr>
<tr>
<td>7 Credit Agricole</td>
<td>15 %</td>
<td>Write down €3.3 bill fourth quarter 2007.</td>
<td></td>
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<tr>
<td>8 JP Morgan Chase</td>
<td>14 %</td>
<td>$3.7 Bn in settlements in Enron scandal.</td>
<td></td>
</tr>
<tr>
<td>11 UBS Switzerland</td>
<td>12 %</td>
<td>Write off est. $7.2 Bn 2007. Lost €690 million the LTCM collapse. Received a $4.9Bn bail-out in 2008.</td>
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*Proportion of new CDO varieties of total CDOs launched
Two innovation booms 1980’s & 2000’s: Innovation accelerated and creativity declined

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<tr>
<td>New CMO/CDO offerings</td>
<td>0</td>
<td>59</td>
<td>2</td>
<td>336</td>
</tr>
<tr>
<td>Repeat CMO/CDO offerings</td>
<td>0</td>
<td>112</td>
<td>7</td>
<td>1,791</td>
</tr>
<tr>
<td>Total CMO/CDO offerings</td>
<td>0</td>
<td>171</td>
<td>9</td>
<td>2,127</td>
</tr>
<tr>
<td><strong>Percent new CMO/CDO offerings</strong></td>
<td>0</td>
<td>35 %</td>
<td>22 %</td>
<td>16 %</td>
</tr>
<tr>
<td>Significant financial innovations (Matthews, 1994 + Finnerty &amp; Emery, 2002)</td>
<td>14</td>
<td>107</td>
<td>6</td>
<td>n/a</td>
</tr>
<tr>
<td>Patent applications globally by 20 top CDO-launching banks</td>
<td>15</td>
<td>34</td>
<td>452</td>
<td>1,271</td>
</tr>
<tr>
<td>Patent applications annually</td>
<td>0</td>
<td>n/a</td>
<td>83</td>
<td>155</td>
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Sources:

Innovation up: >5-fold
Volume up: 12-fold
Creativity down: Less than half.
Patents: mainly for protection
The Case of the Collateralised Debt Obligation

OLD CONTEXT

Professional context of banking

NEW CONTEXT

- 'Trade'
- Income = the difference between buying and selling prices.
- Turnover and trading volume determine the profit.

Greenspan 2008: “shocked disbelief over the failure of the self-interest of lending institutions to protect shareholders' equity”

- ‘Buy and hold’
- Income = the difference between deposit and lending interest rates.
- Creditworthiness of the borrower is crucial for profit.

'Study: “This [1987-1998] class of models performed poorly”.

R.C. Merton: “Is there a structural relation between innovation and crisis? I think there has to be.”

Meriwether, LTCM: “The nature of the world has changed and we didn’t recognize it”.

Li: “Actual prices in the market often differ from what the model indicates they should be.”

Rubin: “the market is functioning differently than…in the past”

The Economist: “Complicated structures which confused investors”

1st generation 2nd generation 3rd ~4th ~5th ~6th
How radical innovation causes temporary incompetence

Securitization

Unintended & Unanticipated Consequences

- Securitization becomes “technology” for financial innovation
- Radical change in financial industry
- Repeated prediction errors by industry experts & regulators

Intended effect: Attract Wall Street funds to mortgage loans.

Beneficiaries: • Home owners

Merton, R. K. (1936)
Why did temporary incompetence persist?

1. The New Context was measured with the tools of the Old
2. Prediction errors were built in the products
3. Systemic changes of professional context due to herding
4. Pro-Innovation Bias:
   a) Belief that faster innovation is better
   b) No double-loop learning in industry
5. Experts and legislators were blinded by ideology
6. Legislation created path dependency
1. Measuring the New Context with the tools of the Old

- Unanticipated: Securitization rapidly changed the professional context.
- Industry statistics lagged behind the change, therefore...
- ...relevant data were not collected, and ...
- ...systemic effects on the financial industry were not perceived (until mid 1990’s):

- **Temporary incompetence persisted on policy + industry level**
2. Prediction errors were built in the products

- CMOs and CDOs: “Prediction is the product”. Value depends on prediction of behaviours of home owners based on historic trends.
- Statistical models do not (can not) anticipate behavioural changes due to endogenous factors.
3. Systemic changes of context due to herding

- The whole financial industry embraced securitization and influenced home owners’ behaviours in unpredictable ways.
- Computer models were always one step behind, and...
- ...temporary incompetence persisted on industry level
4a. Pro-Innovation Bias 1: Faster is better

➢ Innovation is “good” – therefore more and faster innovation must be “better”.
➢ However, when innovation intensified creativity declined. Speeding up became dumbing down.
➢ Temporary incompetence increased on policy + industry level.
4b. Pro-Innovation Bias 2: No double-loop learning in Industry

Six financial crises occurred 1987-2008 (= one every 3.5 year). None of the handbooks* published immediately after a crisis contains a chapter discussing what can be learned from the crisis.

- No chapter criticizes the fundamental flaws in the designs. Instead solutions were advanced:
  - Incremental (more of the same) innovations to solve the problems with the previous innovations.
  - Improve efficiency of calculations and accelerate design of new varieties of the existing fundamental design.

- Temporary incompetence persisted on policy + industry level

*) Handbook of Mortgage-backed Securities (6 editions, 264 chapters)
5. Ideological blinds

- Neo-classic economic theories underlying the equations also became enshrined as fundamental values of government.

- Critique was dismissed as political debate

- Temporary incompetence persisted on policy level
US agencies and legislators played decisive role in the initial CDO designs and repeatedly paved the way with changed legislation. Design deviations were open to litigation.

Effects:

- The flawed design became ironclad.
- The financial industry's descent into its death-spiral was speeded up.

Incompetence became a built-in feature of the product
Radical innovations may alter the context in which they are diffused. This leads to *temporary incompetence* that causes unintended negative consequences.

Worst case: temporary incompetence persists for long time. This may lead to disaster for the industry and for society.
Four Myths of the Innovation Paradigm

1. Myth: Innovation is overwhelmingly “good”.
   - Innovation has both desirable and undesirable consequences. They often affect different groups.
     - **Desirable** short-term economic benefits: Firms, innovators and some users
     - **Undesirable** health issues, pollution, long-term indirect effects: All others.

2. Myth: The innovating firm is the risk taker.
   - **Society is the ultimate underwriter** of all indirect risk on health, ecology and economy.
   - The innovator has an economic risk/reward equation.

3. Myth: More innovation is better.
   - Innovation may merely multiply the unintended consequences of an inherently flawed design due to path dependencies and systemic effects.

4. Myth: Acceleration of innovation is essential for survival (of firm, country, region).
   - Speeding up easily becomes dumbing down. Two surges of financial innovation were highly instrumental in the lead up to the Global Financial Crisis.
**Implications**

**Effect of Paradigm:** Innovation research is biased and routinized.

- Less than 0.5% of articles discuss other consequences than the intended positive effects.

**Concern:** Negative effects of innovation may be increasing.

- Negative effects and indirect consequences are neglected by research funding bodies
- Acceleration of innovation is encouraged on all levels in society
- ICT-enabled innovation is systemic - local effects become global

**Huge unexploited potential to improve net effectiveness of innovation:**

- Explore how to reduce negative and unintended effects of innovation in society.
The aim: To contribute to a more nuanced perspective on innovation

16 scholars from 9 countries

Almudena Cañibano
Beata Segercrantz
Benoit Godin
Karl-Erik Sveiby
Karl-Heinz Leitner
Kotari Kawajiri
Martin Fougere
Martin Lindell
Mervi Hasu
Mitsutaka Matsumoto
Nancy Harding
Nikodemus Solitander
Oihana Basilio
Paloma Sanchez
Pernilla Gripenberg
Urmas Varblane
Securitization and the CDO

Move ownership to a separate company: "Special Purpose Vehicle", not owned by the bank.

Slice the pool in many varieties and sell to investors.

Controlled by...

CDOs

Collateralized Debt Obligation
Why did the banks go broke?

Pool of Mortgages 

Move ownership to a separate company: ”Special Purpose Vehicle”, not owned by the bank

Slice the pool in many varieties

Sell to investors

CDOs
References


