



# The 2008 financial collapse: Lessons for engineering failure

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## ABSTRACT

The banking system, just like engineering systems, fails from time to time. As a consequence, again like engineering systems, it has imposed on it a risk regulatory system. While the 'technology' being regulated is clearly very different, it is shown that the wider incentives to take risks and the consequent problems for risk regulation are very similar to real world engineering. The evolution of the crisis is described drawing on published inquiries and the parallels at each stage of the crisis to engineering systems failures are identified. The conclusion is drawn that the real failure was not the regulators but their oversight system – the meta-regulation framework. Conclusions are drawn for the function of risk regulation in engineering especially as applied to complex systems.

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## 1. Introduction

While engineering technology has little contact with the banking system, finance often plays a major role in the engineering of real products. Engineers will be aware of the impressive toolkit of regulation that is intended to protect those who use the banking system from its occasional failures. Banks have always failed just as engineering devices have always failed. The banking risk regulation system is better endowed in banking than in engineering because the former is much more transparent, independently audited and has to hand an enormous statistical database that would be the envy of any forensic engineer. But if this is the case how did the global banking system collapse in 2008? Does it imply that if such a sophisticated system can fail so catastrophically that engineering systems, particularly large and sophisticated systems can and will suffer the same fate? To answer that question and explore lessons to be learnt for engineering failure analysis this paper reviews the causes.

The paper is in four parts. First the nature of banking is reviewed to highlight the role of risk management and risk regulation. In particular the argument seeks to draw the parallel between the bank and the engineered product as a mediator between service provider and service seeker. Second the collateral debt obligation is introduced and presented as a new 'product' that became available at the end of the 1990s and is argued was the cause or vector of the collapse. Third the failure of the supervisory system is reviewed as use of the CDO unwound the system in apparently unexpected ways. Finally general conclusions are drawn and applied to engineering, especially engineering networks.

## 2. Banking and banking products

### 2.1. Banking

At its most generalised, the bank is a brokerage between those with a call on resources that they can be tempted not to exercise immediately and those who would use those resources now on promise of paying back to the first party before the resource is required by them. Although economics textbooks seldom pay much attention to 'financial' issues the banking

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