

The Future of Finance

Structure, Innovation & Ethics

MAY 2013



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Welcome

Dr Christopher Sier FRSA

In 2012 we, the Financial Services Knowledge Transfer Network (FS KTN), realised that whilst there was plenty of discussion on structure and regulation of financial services, or ethics and morality within the sector, or indeed on innovation within the sector, these subjects are all linked and had not really been considered simultaneously. Furthermore, the various groups that might have some interesting comment on these issues could be much more collaborative. The upshot was the Future of Finance Conference 2013, which aimed to cover structure, regulation, ethics and innovation together and involve a wide array of stakeholders including traditional economists, 'new' economists, quant scientists and mathematicians, high-powered computer scientists, innovators, policy-makers, regulators, and, of course, the industry.

FS KTN is grant-funded by the Technology Strategy Board and the Economic and Social Research Council to foster knowledge transfer and collaboration within and across the financial services industry, and between financial services and other sectors and players such as government, academia and entrepreneurs. It is an independent body that acts as a platform for discussion to understand and perhaps solve some of the key challenges facing the sector. We actively seek industry based challenges and problems and act as a catalyst, often using academia and entrepreneurs as a source of new information and new solutions.

We took this model into the conference by bringing a wide and diverse group of people together to transfer some of the knowledge of work already done on key issues facing industry, and to encourage engagement between the sector, academia and entrepreneurs. Our experience tells us that sometimes this means articulating the needs of industry in such a way that academics and entrepreneurs can work on research topics that have impact. Sometimes this means expressing the data and support needs of academia that will allow them to produce good research. Sometimes this means taking developing research and innovative business models and technology to the industry for them to adapt, adopt or otherwise consider. In the following pages you will see this model for knowledge transfer and innovation in action, as indeed it was during the conference.

We would like to thank our collaborating partners and sponsors who made this conference possible. Details on all our partners can be found on page 92 at the end of this booklet. We would like to extend a special thanks to the University of Oxford institutions that collaborated so effectively with us from the outset: The Institute for New Economic Thinking (INET) and their Director, Eric Beinhocker, who gave the insightful and challenging opening keynote (page 5); the Saïd Business School for the use of their wonderful facilities; and the Oxford-Man Institute of Quantitative Finance (OMI) for their enthusiasm and support. In addition to academic collaboration, we also had support from the finance industry from BNY Mellon who sponsored The Great Debate (see page 51) and BNP Paribas.

Finally I would like to acknowledge the work and support of Dominic Hobson who contributed enormously to the agenda, edited the lengthy conference transcripts and then tied the whole document together. I hope you enjoy his efforts as much as we have enjoyed his insights, enthusiasm and drive.

Dr Christopher Sier FRSA

Co-Director

Financial Service Knowledge Transfer Network

Foreword

Dominic Hobson



Between 2007 and 2009 the financial markets and the institutions which inhabit them descended into practical, intellectual and moral bankruptcy. What did not occur, with a handful of notable exceptions, was real bankruptcy. The authorities decided that the banking and investment banking industries were not just too big to fail, but too dangerous to reform.

All of the regulation which is being imposed on the financial markets today is a consequence of this want of courage. Choose your platitude. The regulators and the central bankers are the physicians treating the symptoms rather than the causes. They are the jerry-builders papering over the cracks. They are the second hand car salesman clocking the odometer.

Seven years on from the beginning of the great financial crisis, the only real change is that banks no longer fund their assets with commercial bank money, but with central bank money. The balance sheets of the Federal Reserve and the Bank of England have expanded more than four-fold since 2007, and that of the European Central Bank is twice as large as it was then.

Interest rates are deliberately suppressed. The benchmark dollar interest rate has sat at one quarter of one per cent since 2009. The European equivalent has not risen above a single percentage point since the end of 2011, and the sterling benchmark rate has remained 0.5 per cent since the beginning of 2009.

These extraordinary monetary policies are now yielding pathologies of their own. Zombie banks propping up zombie companies haunt every economy. There is persistent asset price inflation in housing, and periodic but unsustainable bubbles in stock markets. Companies, awash with cash but convinced asset prices are inflated, are not investing. The infamous 'hunt for yield' has resumed.

Market forces are not even in suspension. Their workings are actually being perverted. Cryogenic monetary and regulatory policies imposed from without are preventing capitalism from fulfilling its perennial Schumpeterian duty of revolutionising the structure of financial markets from within, by punishing businesses that are not fit to survive.

Yet these policies are the source of much self-congratulation in official circles, whose decisions and decision-making processes are followed by economists working in major financial institutions with all the detachment of cheerleaders. It is not by accident that most economists work in banks or government. Industry and commerce, which must deal in realities rather than abstractions, long ago concluded they had little use for mainstream economics.

All of the theoretical paraphernalia of financial excess, rushed from the laboratory to the market not because it was viable but because it was profitable, has somehow survived being tested to destruction in the long bull market and its disastrous denouement. The irrelevance of capital structure, trade-offs between risk and return, capital asset pricing models, Black-Scholes-Merton options pricing theory and the efficient markets hypothesis are all still in day-to-day use.

Even risk – however much of it is collateralised, or intermediated through central counterparty clearing houses today - is still being managed by variants of the Value at Risk (VaR) methodology, as if the great financial crisis had never occurred. In other words, it is not just the unstable structure of the financial system which has survived the crisis, but its flawed intellectual superstructure as well.

If reform of the banking and securities industries cannot come from without, or from within, it must be found elsewhere. The academy is the obvious place to search for a catalyst. Unfortunately, in even the finest universities – institutions whose principal purpose is to deepen and extend human understanding, beyond any limit of interest or ideology – the forces of conservatism have so far proved more powerful than those of reform.

There is a natural reluctance among academics to surrender the ideas which have informed their financial models throughout their professional lives, and which they have passed to the next generation as the essential mysteries of their professional caste, even in the face of a defeat as catastrophic for their practical application as that of 2007-09.

After all, as hard a science as physics has yet to resolve the conundrum posed by the discovery of the quantum in 1900. So it is scarcely surprising that economics, whose aspirations to scientific status seem less realisable now than ever, is capacious enough to make it possible for Copernicans to survive in a quantum universe. But this does not absolve the rest of us from aspiring to the truth, even if we cannot yet possess it.

Which is why a large part of the purpose of the inaugural Future of Finance conference was to create a congenial home for that small but growing band of thinkers and practitioners (and sponsors) who believe that it is possible to understand better how financial markets behave, and then design and operate a financial system whose stability is not contingent on complex, detailed and distortionary regulation.

To this Wartburg of the financial reformation, if you like, we welcomed those who believe that markets are complex adaptive systems more akin to organisms or ecologies than the equilibria of classical economics; that regulation is cause as well as consequence of financial instability; that parallel systems of finance are more soundly based than highly leveraged banks; and that liquidity is a cost as well as a benefit.

To the robotic, utility-maximising individual with stable preferences, buying and selling in markets which always return to balance, we opposed the richer, less rational and more rounded understanding of the character of homo sapiens derived from the study of biology. We asked whether regulation is the enemy of integrity, or a substitute for it, and questioned whether contractual relationships are morally inferior to personal affiliations.

Against the abstract risk modelling of the Wall Street quants, we fielded risk managers drawn from the real worlds of medicine, air travel, defence and petrochemicals. We examined how technology could be used by banks not to add needless complexity, trap customers and deter competitors, but to cut costs, create new products, disintermediate expensive middlemen, and broaden the sources of financing and banking services for entrepreneurs, the young and the unbanked.

These ideas are not a blueprint for a better financial system. Their value lies in their humility. Unlike the orthodox schools, which hold that as large a sphere of human action and interaction as the financial markets can be reduced to mathematical models, and their imperfections remedied by regulation or taxation or both, their authors accept that understanding is always provisional, that knowledge does not rest on authority, and that stability evolves by discovery not diktat.

They are aware also of the infinite potential of the explanations that we find. It became obvious in 2007-09 that existing explanations of the behaviour of financial markets were inadequate, but old patterns of thought have proved remarkably resilient. It is the earnest hope of those of us who were privileged to take part in the inaugural Future of Finance conference that this summary of its proceedings can play some small part in the liberation of bankers, economists and policymakers from failed ideas and the noxious remedies they spawn.



Keynote Address

Eric Beinhocker

Executive Director - Institute for New Economic Thinking (INET),
University of Oxford

The ideas of economists and political philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood. Indeed, the world is ruled by little else.

John Maynard Keynes

The loss of output caused by the great financial crisis is exceeded only by the First World War. It has cost more than either the Great Depression of the 1930s or the Second World War. The levels of debt are also at historic highs. Only the Second World War has seen a comparable increase in the levels of public debt. So we have certainly had a crisis in the economy. But we have also had a crisis in economic thinking. These twin crises are deeply related. Poor economic thinking, or mischaracterisation of the economy, has led to a crisis with enormous costs for people across the world. As the Queen asked a group of prominent economists at the London School of Economics in November 2008: "Why did nobody notice that the credit crunch was on its way? How did we let this happen? How did we miss this?"

It was not only the Queen who was baffled by the crisis. Many of the most powerful policymakers in the world also found that the conventional thinking – the economic tools and models that we had at the time - were not up to the scale and nature of the crisis. As Jean-Claude Trichet, president of the European Central Bank (ECB) during the worst of the crisis, said: "As a policymaker during the crisis, I found the available models of limited help; in fact, I would go further: in the face of the crisis we felt abandoned by conventional tools." So it is interesting to read what a group of prominent economists told the Queen in a letter they wrote to her from the British Academy for the Humanities and Social Sciences. It argued that, while the crisis had many causes, it was principally a failure of the collective imagination of many intelligent people, both in the United Kingdom and elsewhere, to understand the risks to the system as a whole.

This is largely correct. The crisis was a failure of the collective imagination. The thinking that led up to the crisis, and which informed the response to the crisis, did not match what was being observed and experienced in the real economy. The theories and models and ideas of traditional economics are mismatched with the reality of the economy. Traditional economics cannot explain the behaviour of the economy during the crisis. What do we mean by traditional economics? One of its most fundamental assumptions is that the economy is an equilibrium system, which behaves like a ball falling into a bowl. By a combination

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of constraints (such as the technologies available) and incentives (primarily self-interest) the economy is always led to a point of equilibrium, or rest, where it will not move unless disturbed by an outside force. This idea of the economy as an equilibrium system had underlain economic thinking since the 1880s.

Underlying the idea of the economy as an equilibrium system is a set of assumptions. They include the assumption that markets are efficient, in the sense that prices reflect all available information, ensuring that goods and services are always traded at the “right” price. If markets are efficient, it follows that regulation is inherently inefficient, and that it imposes deadweight costs on the economy. Equilibrium economics also assumes that investors and individuals and households are rational in their decision-making, and that institutions, including banks, are optimally managed. There is also an assumption that innovation is always good and that all the novelty in, say, the derivatives markets, leads to greater efficiency in the market and a better allocation of risk, which makes the financial system more stable. Finally, equilibrium theory holds that markets are self-correcting. In other words, there may be shocks and perturbations to markets, but they always return to an optimal equilibrium.

This return to equilibrium is a poor description of what we saw before and during the crisis. That is not surprising. The notion of equilibrium, that is so central to traditional economic thinking, did not stem from observations about how the economy actually works. It emerged from work in the late nineteenth century by Léon Walras and William Stanley Jevons, who borrowed the idea from the physics textbooks of their time. The notion of equilibrium was a relatively recent development in mathematics in the mid-19th century, and Walras and Jevons were interested in making economics more mathematical. They took contemporary mathematical tools, and recast them as economics, and economics has remained within that framework ever since.

Unsurprisingly, those tools did not correspond to what happened before and during the crisis. Equilibrium systems do not grow in an explosive way, as we saw in the period prior to the crisis. They do not create novelty either. In an equilibrium system, there is no endogenous mechanism to fuel the innovation in the financial system that took place before the crisis. Above all, equilibrium systems do not spontaneously crash in the way that the financial system did in 2007-08. So the crisis strongly challenged all of the assumptions that underlie equilibrium economics. In fact, the experience of the crisis has broken economics into three camps. The first says that the equilibrium model is still valid; that it can explain the crisis; and that it should be retained. The second - which encompasses the majority of economists - argues that equilibrium economics needs only to be adapted to new information, but remains fundamentally intact. The third camp, which is in the minority but growing quickly, is the Kuhnian camp. They say, with Thomas Kuhn, that economics needs a new paradigm - a new way of thinking about and understanding the economy.

The economists in this third group have looked at other disciplines - engineering, psychology and biology as well as physics - to provide a new way of thinking about the economy. There is one particular way that looks promising in terms of offering insights into how the economy works. Rather than thinking of the economy as an equilibrium system, this approach conceives of it as a complex adaptive system. It is complex because it is made up of many interacting parts, or particles, or agents or, in the case of an economy, people and organisations. It is adaptive because the behaviour of those people or organisations changes and evolves over time in response to their environment. And it is a system, in the sense that macro patterns emerge from micro levels of interaction.

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These types of systems are well-known in science. They are studied in everything, from the immune system to epidemiology to understanding traffic flow. They are common in both natural and man-made environments. The good news is that these types of systems are increasingly well understood in science. There is a growing movement to apply that same understanding to the economy.

What might a complex, adaptive system actually look like in the context of the economy? The economy is a group of interacting agents: individuals buying, selling, transacting, and exchanging information. Those individuals organise into coherent structures, such as firms, banks, and other organisations in the economy that have some coherence and endure over time. Neither the individuals nor the organisations are static. They change constantly as they interact with and adapt to their environment. At a higher level, these individuals and organisations of individuals also form structures, known as industries or sectors. They also interact with each other, and adapt to changes in the environment. The sort of macro-level economy which results from these interactions and adaptations at the micro-level is very different from the ball-in-the-bowl equilibrium model. The economy is much more like a biological system, made up of lots of interacting components and structures at multiple levels of aggregation in the economy, interacting and evolving dynamically over time.

Seeing economies from this perspective gives a different view from a more traditional, equilibrium based view. Traditional economics assumes that the economy always returns to a static balance, or equilibrium. Complexity economics assumes that the economy never comes to a state of rest but is in fact dynamic and changing over time. A simple way of understanding the difference is the fallacy of the so-called law of supply and demand. Equilibrium economics assumes that the price mechanism brings the supply of goods and services into balance with the demand for them. In fact, no such "law" is at work. In a supermarket, for example, there are always goods on the shelf, because supply and demand are never in perfect balance. Instead, supply and demand are dynamic functions that are moving over time, and retailers have and need inventory to compensate for the constantly changing differences between supply and demand. In other words, a supermarket is never at rest. It is a dynamic system. Similarly, in a financial system, traders trying to access liquidity are seeking another form of inventory. During the financial crisis, their inability to obtain it mattered a great deal to them. They found that supply and demand were not clearing in the markets. The dynamic interaction between supply and demand is not just "noise" in the system, but has real effects on the real economy.

A second difference between complexity economics and traditional economics is that traditional economics assumes individual agents are rational and motivated by self-interest. However, decades of work in psychology, behavioural economics and experimental economics has shown that human beings are actually much more complex creatures. They use rules of thumb and heuristics. They make errors, have biases, and tell each other stories. This work offers us a much richer model of human behaviour. A third difference between complexity economics and traditional economics lies in their different interpretations of networks. Traditional economics assumes that the network structures of the economy do not matter, that exchanges of all kinds are arbitrated by the price mechanism and that the networks which result are too connected to fail. In the crisis, however, who was connected to whom, and what was connected to what, turned out to make a big difference to how the economy performs.

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A fourth difference between complexity economics and traditional economics lies in the fact that traditional economics assumes the economy adds up in a linear way. The models that the central banks use, for example, assume that they can simply add up all the consumers in the economy into one representative consumer and all the firms in the economy into one representative firm. Complexity economics assumes instead that there is heterogeneity in the economy and that interactions between heterogeneous agents can lead to emergent patterns and higher level dynamics that are invisible at the level of the individual consumer or firm. A useful metaphor is the whirlpool. There is no whirlpool at the level of an individual water molecule. A whirlpool is a pattern of interaction between multiple individual water molecules. Likewise, economic phenomena such as booms and busts in the housing and stock markets can be characterised as emergent patterns of individual interactions. A fifth difference between complexity economics and traditional economics is that traditional economics does not have a good, endogenous theory of innovation – an explanation of where novelty comes from. Complexity economics, on the other hand, has evolution. It sees novelty as a form of evolution in the system, of trial and error, of exploration, and of experimentation that is constantly occurring within the economy. The financial system has witnessed an explosion of innovation over recent decades.

The complexity view of how the economy works represents a radical shift from a static, rational and linear system to an open, dynamic system with heterogeneous agents, behaving in a realistic fashion, interacting with each other within institutional structures and networks, and leading to macro-behaviours that can be understood as a complex, adaptive system. It offers a more convincing explanation of how the financial system behaved before and during the crisis. During the crisis, the system was often far from equilibrium; markets were not clearing; there was no sense that prices were moving in a rational way; the behaviour of economic agents was manifestly far from rational; there were cascades of contagion in the system through the network structures; there were massive waves of innovation in the financial sector; and, over two or three decades, a bubble built up which ended in an almighty crash. Complexity economics can explain all these phenomena much more successfully than traditional economics.

The question is: are complexity economics just an academic idea? Are they just theoretical ideas? No. They can actually be used by both policymakers and by the financial services industry to inform concrete actions and decisions and build concrete models. For example, the macro-economy is currently modelled by the central banks using something called dynamic stochastic general equilibrium models. That is a fancy way of saying that the economy is being modelled as a linear, equilibrium system. They assume that an economy experiencing a severe shock is like a jelly being poked with a stick. It wobbles a bit, but eventually assumes its former shape. Such models performed extremely badly during both the run-up to the crisis, and during the crisis itself. One reason for that is that they did not have banks in them. It is stunning to reflect that the models of the economy used by central banks do not have banks in them, but it is perfectly understandable in the light of the theory behind them. In an equilibrium system, the banks should not matter. They are just part of the plumbing, responsible for clearing transactions between savers and firms and should not have much effect on the macro-economy. In reality, of course, the network of banks had a considerable effect in the crisis. But the models ensured that, if a bank like Lehman Brothers failed, policymakers did not know what would happen to the rest of the system.

This is why there is now considerable interest on the part of the banks and the central banks, as well as in

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academia, to explicitly model the network structure of the banking system and the “shadow banking” system and other financial markets.¹ The goal of the new models is to understand the linkages between the macro-economy and the financial system by disaggregating both. The models include networks of banks. They see households as heterogeneous: rich households, poor households, households with big mortgages, households with small mortgages, households with credit card debt and households without, and so on. The models encompass firms of different sizes, from large enterprises to small and medium-sized businesses. In other words, the models try to capture the real populations in the economy, the real distributions and heterogeneity of balance sheets, and even the impact of the central banks and regulators that intervene in the economy in various ways. They capture all the balance sheets in the economy, and model how consumer balance sheets interact with bank balance sheets, and how bank balance sheets interact with the balance sheets of industrial and commercial firms, and how all of these economic factors are affected by the interventions of the central banks and regulators. This type of model has open dynamics. It does not necessarily settle into equilibrium. It might have some stable states. It might not. It can have bubbles and crashes, just like the real system does.

These models offer a new way to understand how the interlinked financial system and real economy work. They have the potential to provide insights into key questions such as how to measure systemic risk, what makes the system fragile or robust, and whether systems can be designed in ways that make them more stable. The inability of central banks and regulators to design more stable systems was another area of ignorance highlighted by the crisis. It was well understood that markets do sometimes self-correct. In fact, 99 per cent of the time the system works wonderfully. The challenge is to know when that 1 per cent is likely to happen, and the system fails badly and markets do not self-correct. There are trade-offs between making the system more stable, letting innovation flourish, and achieving sustained economic growth, and between regulation and open markets. It is possible to make the financial system perfectly safe by, in essence, killing it - stopping it growing and innovating. At the other extreme, if the system is allowed to run wild, crises may reoccur.

For policymakers, the important question is what is likely to work. They face pragmatic choices over which policies and interventions are likely to be effective, and which ones will have negative secondary effects. Sometimes the medicine can be worse than the disease. There may also be leverage points in the system - targeted interventions that have a disproportionately positive effect at relatively modest cost. These are still early days in terms of finding answers to these questions. But I am confident that, if we are prepared to relax our faith in the assumptions behind equilibrium economics, policymakers will gain new insights into these questions. As Albert Einstein observed, problems cannot be solved by using the same kind of thinking that created them. The crisis showed, in stark relief, that new and better ways to understand the economy, and new and better ways to manage it from a policy perspective, are required.

¹ The European Commission is funding the Forecasting Financial Crisis (FOC) project to better understand systemic risk and global financial instabilities by means of a novel, integrated and network-oriented approach.



The perverse consequences of financial regulation

A panel discussion between Tim Congdon of International Monetary Research Limited, Will Hutton, Principal, Hertford College, Oxford, Dr. Wladimir Kraus of the University of Michigan and Professor George Selgin of the University of Georgia, moderated by Baroness Williams of Crosby.



Professor George Selgin



Baroness Williams



Tim Congdon CBE



Will Hutton



Dr. Wladimir Kraus

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Baroness Williams noted that the complexities of financial markets are now so great that many directors, let alone shareholders, do not know what is going on. She had spoken recently to the chairman of a large international bank, and it was quite clear that he had no understanding whatsoever of recent financial innovations and felt completely out of touch with the questions that were being put to him. She thought this was partly a generational issue. More worrying, she thought, was the lack of understanding between social and political ideas and the ideas of economists and financiers. Bankers, she thought, were suffering from a “savage and extreme” loss of trust among the public, which politicians were addressing by regulation. She warned those who thought the consequences of regulation were invariably “perverse” that the alternative was a complete loss of democratic legitimacy on the part of the financial services industry. “In a democracy, one has to find some way of bringing about a meeting of minds,” said **Baroness Williams**. “And the way that is mostly decided upon has been regulation.” She lamented the absence of a global regulatory framework to match the global nature of the financial services industry. “If regulation does not work, the alternative is law,” she concluded.

“The regulators failed,” said **Wladimir Kraus**. “The financial crisis obviously imploded on their watch and they apparently did not do enough to prevent it from happening. But that simple conclusion tells us very little about the reasons why they failed.” He said that two theories purported to explain regulatory failure. The most influential holds that regulators lacked the expertise and resources to compete with powerful financial interests, which rendered them “virtually captive.” This theory argues for greater political resolve, to ensure regulators have the power and resources to regulate effectively. “But this theory of the crisis is entirely unfounded,” said **Wladimir Kraus**. “There is no evidence of actual instances of regulatory capture.” He favoured an alternative theory of regulatory failure. This holds that the complexity of modern financial economies, coupled with a limited understanding of how they really work, means regulators necessarily base their actions on incomplete theories. For example, banks did not invest in structured credit securities ahead of the crisis not because they were greedy or reckless, but because the securities had AAA ratings, and the Basel I and II capital adequacy regimes incentivised banks to invest in AAA securities by according them a lower capital weighting. “Bankers did not invest in the securities either because of their greed or the moral hazard created by too big to fail, but because the regulators wanted them to become more prudent,” noted **Wladimir Kraus**. Nor were regulators wrong in formulating that perverse incentive, based on the prevailing theories of the time. The risk of acting on inadequate premises remained intact today, warned **Wladimir Kraus**. To mitigate it, he recommended competition between regulatory ideas. This would avoid the risk of all regulators settling on a single model which fails to work or which has perverse consequences. “What might best explain the crisis of 2008 is not the ineptitude or moral failure of specific individuals, be it regulators or bankers,” he concluded, “the fundamental explanation, in my view, is the adaptation by regulators of a series of wrong theories about how the system works.”

George Selgin likened financial regulation to a cat chasing its own tail, in which the unintended consequences of one set of regulations prompt a second set of regulations, which also have unintended consequences. For example, he cited regulation of bank capital as a predictable consequence of insuring retail deposits. “It used to be that people needed bank capital to trust their banks but, after deposit insurance kicked in, that ceased to be true,” said **George Selgin**. “Now, we have to regulate capital. Oops! If you do not regulate it right, you get sub-prime securities in droves, and so on. It goes on and on and on. The real problem is intervention in the financial system, not a lack of regulation. It is not the fact that things are getting more complicated. It is just that the

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regulators cannot ever catch up. No matter how many steps it takes, the cat is always the same distance from its ultimate goal." He pointed out that financial services were always one of the most heavily regulated sectors of the economy, and that many more economists were in favour of regulating financial services than were against it. "Please, let us not talk about financial systems suffering because economists have argued that they should be unregulated," said **George Selgin**. "It is a myth. The real problem is that they have been regulated all the time." He argued that the market is better placed to strike the balance between failure and non-failure in banking, and that failure does not have the desired effect unless it hurts depositors as well as shareholders. **George Selgin** drew a parallel between the heavily regulated banking system of England between 1694 and 1844 (where the counterpart of a central bank created to fund public debt was a law limiting private banks to just six partners) and the relatively liberal system in Scotland over the same period (where the absence of a central bank permitted the emergence of larger and more robust banks). "I have talked to bankers and I have asked them how any of them dares to operate a safe bank in an environment where most of the customers' money is guaranteed one way or the other," he said. "It is interesting that a few of them have managed somehow; there are still niches for that sort of thing. But there is not that much room for safe banking and, if you go back into the history of banking not that long ago, you will find banks that offer hardly any interest at all and guaranteed safe investments and even published their balance sheets showing how few risky assets there were.

The optimum amount of failure takes care of itself if the persons who choose where their money goes bears some of the risk of failure." He also drew a similar parallel between the history of banking in Canada and the United States. In Canada, an unregulated banking system experienced no failures in the Great Depression, while 6,000 predominantly rural banks failed in the heavily regulated market of the United States. Although the United States did not have a central bank until the Federal Reserve was established in 1913, its financial system suffered from debilitating restrictions on inter-State branch banking ("That is what gave us our piddling little banks that failed all the time"), forced investment in government bonds ("Typically, or often at least, junk") and, from 1934, deposit insurance ("Once deposit insurance was implemented, capital ratios went down"). **George Selgin** argued that the monopolistic position of the central banks makes other banks dependent on them for emergency credit at times of crisis, but that the periodic crises are caused mainly by the misconduct of the central banks. He added that Walter Bagehot, who is usually cited as the originator of the role of the central bank as lender of last resort, understood this weakness in the financial system and would have recommended the abolition of the Bank of England if he had thought it a real possibility. "Central banks are the beginning of the financial cat chasing after its own tail and, of course, we know the ultimate consequence of central banks' powers of last resort lending," noted **George Selgin**. "It has been the rise of a tremendous moral hazard problem in financial systems. This is due to their failure to follow Bagehot's advice that they limit lending to sound institutions with good collateral, allowing the others to fail now and then."

Tim Congdon argued that the cause of the collapse of output in the United Kingdom after 2008 was a fall in growth rate of the quantity of money in the economy of around 10 per cent between 2006-07 and 2008-09. It was, he said, one of the largest shifts in the rate of change in the quantity of money since the 1930s, when the quantity of money in the United States fell by about 40 per cent between October 1929 and the spring of 1933, with serious effects on the rest of the world. Since most money now consists of bank deposits, the regulation of banks is clearly important. In fact, the proximate cause of the abrupt change from strong growth in the money

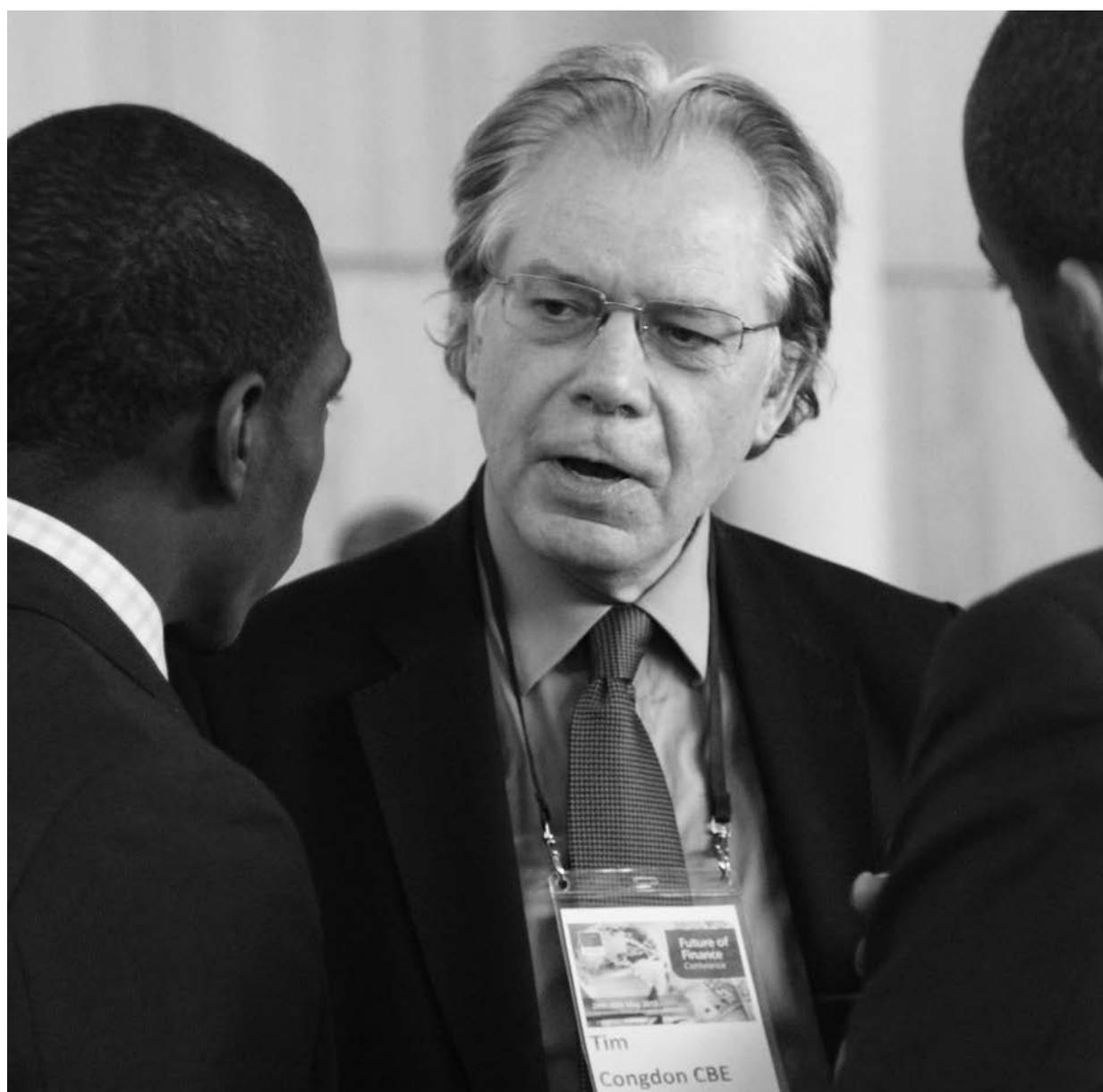
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supply to stagnation was the regulatory decision to re-capitalise the banks. **Tim Congdon** thought this was “understandable,” because the banks had economised on capital for decades, their increased reliance on the inter-bank market for funding meant thinly capitalised banks had struggled to fund their balance sheets at the height of the crisis in 2008, and central bankers and regulators wanted to “make the banks safer.” Unfortunately, he added, forcing the banks to raise capital caused shrinkage in the quantity of money. “If you are a banker and you are told you must have more capital relative to your assets, what do you do?” asked **Tim Congdon**. “You cut back on your risk assets. You ask your customers to repay their loans. You do not give the customers new loans. The result is [that] the quantity of money, the deposits, will fall. That is what caused the Great Recession, okay? Paradoxically, it was the efforts of officialdom in autumn 2008 to make banks safer that caused the collapse in the quantity of money that caused the Great Recession.” His preferred solution was to end regulation by people who are not answerable for the consequences of regulation. “I am afraid people are greedy!” said **Tim Congdon**. “We live in a greedy world. You want to make sure that if something goes wrong, people get hurt in the pocket.” Accordingly, he recommended the privatisation of the Bank of England, so that it is owned by the banks, so that the bank-shareholders have to cover any shortfall when the central bank lends money that is not repaid. “I would like us to get back to self-regulation under the law,” concluded **Tim Congdon**.

The mono-causal explanation of the Great Recession as a collapse in the quantity of money caused by the re-capitalisation of the banks did not convince **Will Hutton**. He pointed out that in 2007 world GDP of \$70 trillion dollars contrasted with \$800 trillion in outstanding OTC derivative contracts; the leverage of the five top investment banks was 35 to 50 times equity capital; and 60 per cent of structured investment vehicles had AAA ratings while making up only a fraction of bonds in issue. “Never in the history of our affairs was there so many financial claims on so little GDP underwritten by so little capital,” he said. “We are being invited to believe that this is all about the perverse consequences of regulation. Actually to argue that scale, *that scale*, is the result of the perverse consequences of what the FSA did - do we really believe that? You have to be extremely ideological and have a perverse view of the world to think it is *entirely* about the perverse consequences of regulation.” **Will Hutton** was also surprised by the claim by **Wladimir Kraus** that there was no evidence of regulatory capture, and he thought the “Manichean view” of **George Selgin** that “private actors do not make mistakes but actually only public actors do” was fanciful. “Democracy and capitalism interact, and regulation is the outcome,” he said. He likened deposit insurance to health insurance, in which the healthy support the sick. “You have to start with the certainty that there is going to be deposit insurance rather than hope that actually it is not going to be there and that it obstructs some kind of platonic notion of the free market,” he said. “And then you have to think what the consequences of that are. And the consequences of that are, plainly, that actually banks have to carry minimum amounts of capital, to ensure that you do not get gargantuan banks emerging and that you try to ensure that you have proper competition and you try to avoid conflicts of interest. Is it going to be perfect? No. Is it a constant case of cat and mouse? Yes. But to give up on it, or to hope that the platonic notion of the free markets allows to you to evade those difficult choices, is not squaring up to reality.” **Will Hutton** deplored the deregulation of financial services in the United Kingdom and the United States in the 1980s and 1990s, attributing it to “intense lobbying” by bankers with a strong personal interest in leveraging bank balance sheets (“fortunes that will last for two, three, four hundred years were made in that 15 year period”). **Will Hutton** also noted that “the regulators became convinced by the story of the time ... the financiers themselves and the regulators and the body of opinion basically bought efficient market theory.” He added that the “sense of

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beleaguerment and victimhood from those on the free market side of this debate” was “bizarre.” He urged that the ideas of John Maynard Keynes and Hyman Minsky, neither of whom believed that bubbles and busts could self-regulate themselves away, inform the debate about the regulation of the industry. “That is why you have regulation,” he said. “Because these tendencies innately exist in financial structures and financial markets.” In terms of concrete measures, **Will Hutton** recommended more capital, more competition, and strict rules about conflicts of interest, including the separation of investment and utility banking as recommended by Paul Volcker, John Vickers and Erkki Liikanen. “The financial system in 2008 was absolutely shot through with conflicts of interest,” said **Will Hutton**. “The rates of return made in investment banking are all about being on both sides of the bargain and knowing you are on both sides of the bargain.”





Shadow banking:

Macro consequences of regulating the shadow banking industry

A panel discussion between Ermanno Dal Pont of Barclays Bank, Dr. Mark Hannam of the Institutional Money Market Funds Association, Andreas Koukorinis of Deep Value Technologies and University College London, Bruce Tuckman of the Stern School of Business at NYU, moderated by Dominic Hobson of COO Connect.



Ermanno Dal Pont



Dr. Mark Hannam



Andreas Koukorinis



Bruce Tuckman



Dominic Hobson

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Introducing the topic, **Dominic Hobson** described the so-called “shadow banking” system as part of a web of interconnections between banks, broker-dealers and fund managers that developed outside the regulated banking sector. He noted that hedge fund managers, for example, are the chief consumers of the “shadow banking” services supplied by the prime brokerage divisions of the investment banks, which raise finance against client collateral from cash-rich banks and money market funds run by other fund managers. In the search for better trade-offs between innovation and stability, argued **Dominic Hobson**, the “shadow banking” system was an ideal test case. While suppressing it might reduce the volatility of the financial system, it might also eliminate a source of the innovation that leads to growth. He added that the main reason the “shadow banking” system caused problems in 2007-08 was that liquidity dried up in the markets for collateral, yet regulators (especially central banks) now see collateralisation as part of the solution, not part of the problem. “You cannot make a payment without collateralising it, and you cannot clear a future or a swap without collateralising a clearing house,” said **Dominic Hobson**. “So we are repackaging risk as risk in the markets for collateral.”

Bruce Tuckman thought the sinister reputation of “shadow banking” was not warranted. He cited money market funds, repo transactions and asset backed commercial paper (ABCP) conduits as three instances in which cash is reinvested by intermediaries in less liquid and slightly riskier assets. **Bruce Tuckman** acknowledged that in the financial crisis there was a run on money market funds, which made it hard for them to continue to supply cash to the repo and commercial paper markets, which made it impossible for the ABCP conduits to continue to fund the asset-backed securities they invested in, which in turn made it impossible for issuers of asset-backed securities to advance new loans. But he insisted that to describe these markets as “shadow banking” is a misrepresentation. “[Shadow banking] is a system that is out of sight, it is unregulated, and it is systemically risky,” he said. “And that is just not a reasonable characterisation of this market.” **Bruce Tuckman** explained that money market funds and the repo markets were visible parts of a highly regulated industry, and that even ABCP conduits borrowing short and lending long actually depended on guarantees from regulated banks to sell their commercial paper. He added that all parts of the so-called “shadow banking” industry were often conducted in different parts of the same, highly regulated banks. “The asset management unit of a bank holding company will run a money market fund,” said **Bruce Tuckman**. “A broker-dealer inside a bank holding company will do repo transactions. Some part of the bank holding company will also create these conduits.” In his view, the “shadow banking” industry does not pose a greater systemic risk than ordinary banking, since even deposit insurance does not guarantee that taxpayers will not be obliged to underwrite losses if a bank fails. **Bruce Tuckman** made two further points in defence of “shadow banking”. First, it met a real demand for relatively safe, liquid and short term investments for institutional and corporate cash pools that accumulate in the ordinary course of business, and which cannot satisfy all of their demands in the short term government debt markets. Secondly, “shadow banking” was also in part a response to the regulatory framework. Regulation Q forbade American banks from paying interest on demand deposits, and until 1986 capped interest rates on time deposits. It was this limitation which led to the creation of the money market funds, whose investments in repo and commercial paper made them a principal source of cash to the “shadow banking” system. At the same time, government encouragement of home ownership – including via public enterprises such as Fannie Mae and Freddie Mac – was an important factor in the creation of the securitised mortgages that the ABCP conduits purchased. Lastly, bank

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capital regulation made it more capital-efficient for banks to hold securitised mortgages than mortgage loans. “The advantage of securitisation lay in the idea that the pieces are worth more than the whole,” explained **Bruce Tuckman**. “Because you have a mortgage-backed security which has a lot of pre-payment risk and default risk, issuers made different slices for sale to people willing to take various kinds of risk. So that was one thing that made these entities useful. But the thing that we realise now, looking back - and some people did realise this at the time- is that the demand from institutional cash pools for the very, very safe piece meant that it had to be tranching in that particular way. You had to create a very safe short term piece, as opposed to just a bunch of long term pieces with different risk characteristics. That is how the conduits fed into the ‘shadow banking’ system.” He also warned that regulation of the “shadow banking” industry was contradicting itself, by forcing banks to borrow for longer terms, but forcing money market funds to lend to them for shorter terms.

Ermanno Dal Pont agreed that the maturity transformation role of the “shadow banking” industry was socially useful, because it was impossible to find borrowers and lenders whose needs coincided at all times. On the role played by “shadow banking” in the financial crisis, he recalled the pre-2008 era, when the risk and reward of new business was measured not against the gross value of the balance sheet of the bank, but its net value. “The difference between the net balance sheet and the gross balance sheet of the bank was the world of repo, reverse repo, securities lending and securities financing,” he said. “People were not paying much attention because they thought of that activity as generally safe because you had liquid collateral behind it.” In other words, the ability of the bank to fund liquid assets in the repo and reverse repo markets was taken for granted. One reason investment banks are active in these markets is prime brokerage. Investment banks in their role as prime brokers service hedge fund managers, which require securities to cover short positions and finance to leverage long positions. The prime brokers use the cash and securities placed in custody with them by the hedge funds to borrow the cash and securities to pass back to the hedge funds. “One thing people have not looked at is how prime brokers actually finance themselves, and how they then finance their clients, the hedge funds,” explained **Ermanno Dal Pont**. “They finance themselves in various ways. The Holy Grail of financing is what is called ‘internal efficiencies,’ because if you have two clients that want the opposite positions in a trade, you can basically match the two, pocket their commissions and you are fine. But what they also do is go into the repo market, take the collateral the hedge funds own, give it to a cash-rich entity like a money market fund, the money market fund gives the cash in return, and the prime broker gives the cash to the hedge fund. It is the same in reverse for the securities lending market. If a hedge fund wants a security to go short, and the bank does not have it, they borrow from an entity that has a lot of securities, like a pension fund, for example. The system works very well, except that it has some intrinsic weaknesses that were obviously discovered during the crisis.” Those weaknesses, according to **Ermanno Dal Pont**, were that all of these transactions ended up on the gross balance sheet, where the leverage they added was less visible; that they created an intrinsic maturity and liquidity mismatch between overnight borrowing by the banks and 90-180 day lending to hedge fund managers; and the pro-cyclicality of a funding system reliant on collateralisation, because lenders tighten collateral eligibility criteria and increase “haircuts” (the reduction they impose on the market value of an asset used as collateral) to protect themselves against deteriorating counterparty credit risk, which further reduces liquidity in terms of the ability to borrow against certain types of asset. “That creates an additional shortage of money in the system,”

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explained **Ermanno Dal Pont**. “That is exactly what happened in 2008.” He added that a variety of regulatory initiatives in the United States and Europe aim to suppress the “shadow banking” industry by reducing the maturity and liquidity mismatch and cut the less visible leverage on the gross balance sheet by a mixture of liquidity and leverage ratios, minimum haircuts, a shorter list of eligible collateral, and increased transparency into transactions. **Ermanno Dal Pont** explained that these regulatory initiatives are forcing prime brokers to lengthen the terms at which they finance themselves and their clients, and that this is increasing the cost of doing business, because there are fewer lenders prepared to finance investment banks at longer terms than overnight. He thinks this is creating a problem for the financial system as a whole because assets under management by hedge funds are increasing, because institutional investors are putting increasing amounts of money into hedge fund investment strategies.

He warned that the lack of readily available leverage at competitive prices might negatively impact strategies which use a lot of leverage, such as fixed income, and increase the tendency of prime brokers to concentrate their available financing with larger and established managers rather than the more innovative smaller ones and start-ups. “If the cost of financing for hedge funds increases, then it will be the end-investors and the pension funds that put money into them that will bear the cost of it,” concluded **Ermanno Dal Pont**. “They will have lower returns. Is that a good consequence for society of these regulations? Well, probably, yes, it is a fair price to pay for having a more stable system. But the real answer will depend on how the regulations are implemented.” **Andreas Koukorinis** praised “shadow banking” in principle as a means of financing transactions, organisations and people that would otherwise be unable to fund purchases, assets or businesses. He argued that motor financing corporations like G Mac, lending clubs and crowd funding are comparable sources of credit for borrowers that would otherwise have no access to it, and that regulatory pressure on the banks to shrink their balance sheets is increasing the wider economic importance of these sources of finance. “If the banks are, because of regulation, having to reduce their business and step back, naturally the ‘shadow banking’ system is going to have to step in somehow and help facilitate the economy otherwise we are going to have a contraction,” he said. He cited the example of a Paris taxi driver, who needs to raise €250-300,000 to purchase a medallion. “There is no bank in Paris right now that would lend that amount of money to a taxi driver,” said **Andreas Koukorinis**. “So if they actually want to set up their own business and not be an employee of someone else who has a bigger balance sheet, or can borrow money, what can they do? They need to borrow the money in some efficient way. They cannot borrow at 16-24 per cent a year.” He said it was easy to forget the benefits of the “shadow banking” system in funding start-ups as well. But **Andreas Koukorinis** also warned that the “shadow banking” system needed to be made less reliant on the capital markets, whose retreat was the real cause of the problems in 2007-08. “For the ‘shadow banking’ system to operate you need a good functioning of the capital markets,” he said. “In 2007-09, the market broke down. The ABCP market got completely dislocated, because there was a lack of good collateral. The originate-to-distribute model, which fuelled the mushrooming of the ‘shadow banking’ system in the early 2000s, failed completely, so people did not have the appetite to buy synthetic risk any more... It is what happens in capital markets. They go from extreme bullishness to extreme bearishness, and what that means is the optimism and the sentiment of the market goes to massive extremes, and that accelerates the pro-cyclicality that affects both credit supply and asset price fluctuations. These are powerful mechanisms that

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contributed to the crisis. The core of this problem is that the capital markets do not really operate as efficiently as we learned at university... The benefits of the 'shadow banking' system are real... The most important thing is to figure out how to make it more robust, more efficient and less reliant on capital markets."

Mark Hannam noted that regulation of the "shadow banking" industry deliberately blurred the line between the capital markets and the banking industry, with the goal of driving money out of money market funds into deposit accounts, to provide a reliable source of funding for banks that get into trouble. He reckoned central banks understand that retail deposits are insured, and ultimately underwritten by the taxpayer, while wholesale deposits are not. "Where are you going to get the cash to cover losses in the banking sector if you are not going to ask the tax payers for it?" he asked. "Well, one way is to try and pull all the liquidity - all the cash that is in the capital markets, or the 'shadow banking' sector - into the banking sector... so there is a pool of money available to bail in banks if they get into trouble. Many of the particular rules which are being proposed for money market funds make it very hard for them to use the repo market, for example. Making it hard for them to own collateralised or securitised paper will force money market funds, to the extent that they survive, to hold uncollateralised deposits with banks. They will be participants in the banking system, but not protected by insurance. And so it seems to me that one of the goals of the regulators is to try and turn the capital markets into a sort of first loss insurance for the banking sector." **Mark Hannam** also agreed with **Bruce Tuckman** that "shadow banking" is a misnomer, in that most elements of the system were not in the shadows but conducted by regulated entities. The money market funds which his organisation represents, for example, were always highly regulated. **Mark Hannam** added that the techniques bracketed as "shadow banking" developed as solutions to real problems within the financial system, and regulating them out of existence will encourage the emergence of other techniques which increase systemic risk. "They were either things that the banking system could not do, or could not do very efficiently, or they met needs within the capital markets, or they provided a mechanism for getting other bits of the system to work," he said. "Securitisation, securities lending, repo and money market funds all developed because they solved problems. If you try to outlaw these solutions, or you heavily regulate them, you have not got rid of the problem that these activities developed to solve. You have taken away a solution. The problems remain. And so one of the possible or likely unintended outcomes of excessive or ill-thought out regulation is that you get what you might call 'shadow banking' squared, which is the next iteration of techniques or activities that allow the system to function more efficiently." He cited the development of interest-bearing money market funds in the United States as a case in point: "If you had cash in the United States in the late Seventies and inflation was getting up to double digits and interest rates were up to 20 per cent at one point, and you had your money in a bank account which because of regulation Q was insured but you got zero interest, then you were giving away 10 per cent of your capital every year because of inflation and the opportunity cost of not capturing money market yields at 20 per cent. It was huge. So many rational investors opted to go into a money fund outside the deposit insurance blanket to get the better return on their cash rather than stay in the banking system. Volcker describes this as regulatory arbitrage. It looks to me like a rational decision by a well-informed investor. What would you prefer? Do you want insurance or do you want a better return? That is how money market funds developed, and how elements of the 'shadow banking' system developed and became embedded. They solved problems which investors wanted to be solved... Money market funds provided a capital market alternative to what was going

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wrong in the mainstream banking system. And what was going wrong in the mainstream banking system was this combination of insurance plus a cap on rates of interest plus very high inflation and very high interest rates. It allowed an alternative capital market solution to how to manage your cash to develop.” In other words, as the history of money market funds suggests, “shadow banking” is not an attempt to get round regulation at all, but an indication that the mainstream banking industry is failing to solve a problem or meet a need. **Mark Hannam** drew an analogy between airlines and trains, arguing that it made no sense to regulate trains as if they were airlines, and good sense to allow consumers to choose between alternative methods of travel. He reinforced the benefits of competition between alternative products by contrasting modern money market funds with his own experience of managing sterling deposits 20 years ago. “If you look at how the sterling market operated 20 years ago it was incredibly inefficient,” he said. “It was very bad for the end-user. It was very unclear what returns you should get. The margins that were taken out by the wholesale banks were very high. The way sterling was managed by asset managers was often expensive and inefficient. Then along came this new product that brought more professionalism, bigger scale, better technology, better credit risk management, and suddenly investors were moving from a traditional mechanism of managing cash – just put it on deposit with a bank through a money broker – into a money fund because they got a much better deal. Money funds grew not because they were doing anything sinister. They just provided a better product.” **Mark Hannam** added that money market funds also correspond closely to the idea of “narrow banking,” which many commentators (notably John Kay and Larry Kotlikoff) have recommended as a solution to the instability of the current system of banking.

Chair: Dominic Hobson
COO Connect





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Science and the finance industry

A demonstration of a computer model of an agent-based complex adaptive system in the sterling money markets, by Simon Bailey of CGI, Dr. Rahul Savani of Liverpool University and Professor Michael Wooldridge of the Department of Computer Science at the University of Oxford. This was followed by a panel discussion between Professors Doyne Farmer, Alex Lipton, Terry Lyons and Philip Treleven, moderated by Dickie Whitaker, co-director of the Financial Services Knowledge Transfer Network.



Simon Bailey



Professor Doyne Farmer



Professor Alex Lipton



Professor Terry Lyons



Dr. Rahul Savani



**Professor Philip
Treleven**



Dickie Whitaker



**Professor Michael
Wooldridge**

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Simon Bailey explained that the financial crisis in 2008 exposed the complacency in the banking industry about the ease and permanence of access to funding. The difficulties encountered by banks such as Lehman Brothers and Northern Rock in maintaining access to liquidity at times of stress proved that illiquidity can rapidly turn into insolvency. As a result, regulators were urging banks to increase their holdings of liquid assets. “Funding liquidity is the ability of an institution to meet its obligations as they fall due,” said **Simon Bailey**. “The point is as they fall due. Even the perception of an inability to meet obligations as they fall due causes a run. So runs happen quickly with a failure to meet obligations. Runs are a freezing of the inter-bank markets and credit provision in the wholesale world. They happen fast and once started they are almost impossible to stop. No bank has sufficient cash or highly liquid assets to meet the demands of all depositors simultaneously.” He explained that, by modelling the behaviour of the sterling money markets as an agent-based complex adaptive system, it might be possible to help regulators understand the impact of regulation; market participants detect early warning signs of illiquidity; and help both regulators and market participants establish strategies, controls and procedures to mitigate the risk to individual institutions and the entire financial system.

Michael Wooldridge explained that the equation-based models used by economists no longer provided an adequate description of economic reality, and needed to be replaced by agent-based models that capture not changes in aggregates such as inflation or output, but decision-makers and interactions between decision-makers. “The agent based model allows us to take into account factors that classic equation-based models do not easily allow us to capture,” he explained. “Things like the fact that the world economy today is a network of interconnected markets which interact with each other. They allow us to capture the fact that the individuals that make the economic decisions which give rise to the macro-economy are actually just individuals like you and me. They have their own beliefs; they have their own desires and their own aspirations; they are not the perfectly rational actors that economic textbooks would like us to believe. They have fears; they have prejudices; and so on. What we want to do in agent-based models is to try to capture some of that. The kind of models we are developing are about a new way of thinking about economic systems which directly represent the actors in the economy. The real world economy is populated by billions of selfish, self-motivated individuals who make economic decisions every day, and what happens in the macro-economy is a consequence of those micro-level decisions. In a sense, agent-based modelling is yet another approach to link up the micro and the macro worlds at some suitable level of abstraction.” In practice, the model is a large scale computer simulation of an economic system which attempts to capture how agents behave when, for example, they fear a market is about to fall.

Michael Wooldridge explained that agent-based models were still at a relatively early stage of development, and it was hard to be confident about whether the trajectories predicted by them corresponded closely to reality or not. “There is something of a controversy in the agent-based modelling community about whether the kinds of results - the conclusions you can draw from agent-based models - are really just qualitative, or whether you can attach significance to the numbers,” he explained. “At the moment, you cannot attach significance to the numbers but what you can do is get some kind of indicators of where market failures might arise. And they can then guide you to look more closely at various different circumstances and scenarios that might give rise to those market failures... Our claim is not that agent-based modelling is in any way going to replace the models that we were all trained in from our economics textbooks, but it gives us another tool, another weapon in the

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arsenal through which we can understand systems. We think this technology can give us useful insights into where things can go wrong, how policies can work, and what the consequences and the perverse consequences of those policies might be.”

Rahul Savani explained that the current model restricts itself to the activities of one major bank in the sterling money markets and its interactions with the central bank, cash-rich entities such as corporates and pension funds, and the brokers that facilitate its inter-bank transactions. It then seeks, added **Rahul Savani**, to model how the bank met its daily and forward funding from its own liquidity pool, central bank money, the inter-bank market and cash-rich entities, while taking account of whether the bank is trying to grow or shrink its balance sheet. “If they are actually trying to shrink their balance sheet, they may more readily go to assets that they already have in order to try and meet funding obligations,” he explained. “When they are actually deciding whether to interact with a specific counterparty, they would typically look at counterparty creditworthiness, the term of the loans and at loan interest rates, and at future funding requirements.” A difficulty in modelling all of these factors, said **Rahul Savani**, was that the risk appetites of participants in the sterling money markets had changed permanently as a result of the financial crisis, and that the model had to capture the markets as they operate now. This presented the modellers, he explained, with an obvious problem: how to credibly integrate historical data (what actually happened) with the endogenous data produced by the model (what might happen). The model is not yet at the point where it can be used to predict the effect of changes in, say, monetary policy, but **Rahul Savani** nevertheless presented some of the outputs of a version of the model that attempts to predict the response of one bank to endogenously produced information as it interacts with other banks and cash-rich entities in pursuit of its daily funding requirements. “As you are building and validating the model, the goal is to see behaviours that look reasonable,” said **Rahul Savani**. “In particular... you would like to see behaviours that look reasonable with respect to specific stimuli.” This happened: when the credit default swap spread of one of the banks was widened, it was locked out of the inter-bank market, and it had to sell bonds to meet its requirements. When the spread was widened again, the bank was forced into a “fire sale”: selling illiquid assets at major discounts. “It is an extremely simplified scenario but it is meant to indicate the type of validation one would do to check that a model behaves reasonably,” explained **Rahul Savani**. “If we could build a well-calibrated realistic model in this particular domain of cash liquidity, we could then start to explore future scenarios, such as quantitative easing, shocks to an individual bank, drops in bond prices due to unexpected events, or a sovereign debt crisis, or regulatory changes, which are often accompanied by unexpected side-effects. We would want a multi-currency model to address those issues, some of which we might be able to spot if you can implement those changes in advance in a good model. It is challenging and difficult to build, but I do believe it is very promising and is especially pertinent to financial systems, due to their highly interconnected and adaptive nature, and the evolving regulatory framework. I cannot say that there are tons and tons of success stories of this approach yet, but it certainly does seem promising.” He pointed out that an agent-based model funded by the NASDAQ exchange to predict the effects of the switch from fractional to decimal pricing was proved correct in five of the six predictions it made.

The demonstration was followed by a panel discussion between Professor **Doyne Farmer** of the Institute for

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New Economic Thinking at the Oxford Martin School, University of Oxford, Professor **Alex Lipton** of Bank of America Merrill Lynch and Imperial College, Professor **Terry Lyons** of the Oxford-Man Institute, University of Oxford and Professor **Philip Treleven** of University College, London, moderated by **Dickie Whitaker**, co-director of the Financial Services Knowledge Transfer Network (FS KTN).

Dickie Whitaker explained that scientific research does not always translate into useful insights and products for the financial services industry. “In financial services, we need science, not just for growth, but for stability,” he said. “The people working on the agent-based model found that the banks were not very comfortable dealing with academia, and some of the academics found it challenging and difficult to deal with the industry. So it is important that we break down the divide between academia and business.” He thought one of the most useful contributions to improving exchanges between the industry and the universities would be an increase in the quantity of data available for academics to work on.

Terry Lyons explained that the Oxford-Man Institute is not only multi-disciplinary – it embraces six different departments at the university, spanning the physical sciences and social sciences – but heavily committed to collaboration with commercial and public sector institutions, thanks chiefly to £25 million from Man Group, which ensures the Institute is fully funded up to 2018. He argued that the firm commitment by both sides was the key to success. Man Group co-locates a group of its own staff at the Institute, yet gives the academics a high degree of freedom to pursue research topics that are of interest to them. “You do not want to end up in a situation where the academics are trying to solve the business problems,” explained **Terry Lyons**. “They cannot deliver. They do not have the timescales and they do not have the expertise either, frankly. But the two teams side-by-side can work brilliantly. Industry can calibrate what the academics are doing. The academic has this bright idea, and they can come along and say ‘We knew that already, because we could read it off prices.’ That actually sets you a much better profile for performance and helps the academic enormously. But it goes in both directions. Things work at their best when the commercial partners and the academic partners are on the same journey. It is an interesting journey because the business side has much shorter timescales, and much more focused problems. The academic side, if they are going to sustain disciplinary excellence, has to take a much longer term and more strategic view.” One example of a successful, committed collaboration between the Institute and a private sector sponsor is machine learning, in which systematic mathematical methodologies are used to recognise the patterns in price and other data. A second (and related) project aims to understand and interpret not price data, but the data contained in news and newspapers, and even oral messages. “A lot of finance is about making decisions,” said **Terry Lyons**. “Decisions need information, and one of the things about information is that the amount of it is increasing and its content is changing dramatically. Understanding and interpreting the signals that come through language is very challenging at a technical level. But they will dramatically change the way we interpret things going forward, because we are suddenly going to have a very different set of data to make decisions.”

Alex Lipton, who combines an academic position with a formal role at Bank of America Merrill Lynch (BAML), thought the interactions between academia and the business world dated back centuries, but had changed rapidly after the crisis of 2008-09. “When I started in this business in the 1990s we were voracious consumers

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of academic thought," he said. "But there was no back and forth, so people would use models such as Black and Scholes for lack of a more concrete methodology for pricing options. They realised fairly quickly that, in spite of its abstract beauty, the model did not work in the real world." The initial result, said **Alex Lipton**, was that bankers tinkered with the model to improve it. The changes were regarded as proprietary, since they were thought to confer competitive advantage. Later, as the products based on the model became more standardised, bankers started to share their insights and they became part of the public domain. The quantitative groups at the banks found they had little need of direct contact with the academics, until the financial crisis disturbed their complacency, and replaced the need to devise or value exotic options with a need to comply efficiently with a rising tide of regulation. "The calculation of regulatory capital and the economic capital associated with derivative transactions, for example, are mind-boggling in their complexity," said **Alex Lipton**. "One needs to generate hundreds if not thousands of scenarios, and revalue the portfolio accordingly, thousands of times a day in real-time. This puts an unbearable burden on what is actually technically possible." It has, he adds, sparked the interest of banks in new mathematical and computing tools. Another field that is bringing bankers and academics closer together is risk and collateral management, most obviously in terms of securing daily funding and collateralising cleared swaps at central counterparty clearing houses (CCPs). **Alex Lipton** also urged academics to take a deeper interest in what he called "the mystery of money creation" by the central and commercial banks. But he thought the academic need to publish sets natural limits to collaboration ("If you work for a hedge fund and discover that if you buy stocks starting with the letter M on Monday and sell stocks starting with the letter F on Friday and you can make a 20 per cent return at a Sharpe ratio of five, I do not think that they would be very happy if you were to publish it even if it were true") but also that practitioners need to be less proprietorial in their approach ("Given the complexity of what banks are supposed to be doing right now, or have to be doing right now, it is inevitable that some of the intellectual property creation process has to be shared with the academics").

Doyne Farmer, who spent eight years running an investment company before returning to academia, also saw limits to collaboration between private sector firms and the universities. He pointed out that banks and brokers and fund managers are naturally more interested in making money than collecting and delivering data, and much of their data was acquired from data vendors on contractual terms that made it impossible to share with academics anyway. To acquire the data in the detail necessary to feed his own study of "market ecology" - the classification of market participants into types according to what they did, with a view to interpreting the market by understanding their behaviour - **Doyne Farmer** had to rely on personal contacts. "Whether you have more trend followers or more value investors actually makes a big difference in how stable the market is, but to understand their interactions you have to get data," he explained. "The problem is you can get lots of data for transactions where you do not have identifiers. But that is like being an ecologist and knowing that an animal ate an animal but not what kind of animal ate what kind of animal. Now we actually have nine years of data where we have counterparty identifiers with names attached to them down to level of the account. We can actually track who is trading with whom and who is making profits, who is growing and who is shrinking, and how that affects everybody else's profitability. But to get this data, it took years of developing personal contacts." **Doyne Farmer** thinks "ecology" studies can explain the excess profits made in financial markets, by showing how certain participants exploit inefficiencies, but warns that they depend on access to data. He is

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hopeful regulatory disclosure – as prescribed by the Dodd-Frank Act, for example - will make more data available to academic researchers. “We need to provide places where the data can be gathered and consolidated, and where ultimately people can get access to the data in order to build these kinds of models,” said **Doyme Farmer**. “There is a fundamental conflict of course between confidentiality - for good reasons, firms do not want people monitoring exactly what they are doing, and they have to have guarantees that the information does not leak out – and the common good aspect of having models get built that allow us to understand what the financial system really does. Because no single bank can do that. No single bank has the view. And until we actually have the data collected, and give people access to it, we are not going to understand how the financial market works. That is really essential, because I do not think the system is functioning as it should. There are some signs that it may happen, but we are not there yet. There is plenty of good will, but I do not think everybody is acting in good faith. Somehow the incentives need to be lined up. We need far-thinking people in industry who can see the value of thinking a couple years ahead which is what I think you have to do to make a project like the one we saw demonstrated work. And I think we need some pressure from regulators and government institutions need to view it as a priority to get some alternative views about what is going on, and get the data in the hands of people who can develop our understanding of it.”

Philip Treleaven, whose department offers access to extensive intellectual and computing power, alluded to the tendency of financial services firms to use his Ph.D. and M.Sc. students on “speculative things,” while a project for the major supermarkets saw them given access to 400 million consumer records. However, in both cases, he said, planting students inside organisations overcomes resistance to granting access to data. “You get them to sign an NDA, or something like that, and then the organisations are very comfortable for you to have access to the data,” said **Philip Treleaven**. “You have to go and work inside the institutions rather than expecting them to give you the data.” He added that his students had helped develop the first insider dealing detection system for the London Stock Exchange, the early fraud detection systems used by credit card companies, and algorithmic trading systems. He argued that commercial companies working with pools of Ph.D. students at universities ensured projects got funded and completed more quickly than waiting for research grants from public bodies. **Philip Treleaven** added that the research projects were creating entrepreneurial opportunities in financial services. “They are just as likely to either come from universities, or to have very close links with universities, because we have got some talent that can support them,” he said. “I am particularly interested to find mechanisms - and this is where the research councils might help - where we can actually support these entrepreneurs through P2P investing systems, or crowd sourced funding.”





Foresight project report:

The future of computer trading in financial markets

A presentation by Professor Jean-Pierre Zigrand of the London School of Economics.



Jean-Pierre Zigrand explained that, in the wake of the “Flash Crash” of 6 May 2010, a publicly funded research study into computer-based trading commissioned 150 academics around the world to write papers on the drivers behind such trading and its impact on the markets. As he pointed out, modern computer trading in the United States and Europe only really dates back to 2007, when traditional stock exchange trading was overtaken by trading through a variety of electronic platforms thanks to Reg NMS in the United States and the Markets in Financial Instruments Directive (MiFID) in Europe. “Suddenly competition was possible,” said Jean-Pierre Zigrand. “Lots of quasi-exchanges started up, and trading of the same securities could happen, at the same time, across many trading venues. A whole new ecology evolved. New traders came in, including high frequency traders and agency brokers, looking to make money in these disconnected markets by trading on their own account or on behalf of final investors.” He added that high frequency traders used either aggressive strategies (hitting limit orders) or passive strategies (posting bid and ask spreads), but it is difficult to work out how much money they make because of a lack of data. However, Jean-Pierre Zigrand cited a study by the Commodity Futures Trading Commission (CFTC) which suggested aggressive traders make \$50-100,000 a day, and passive traders much less. In his view, it is not possible to distinguish between cause and effect when assessing the contribution high frequency traders make to volatility. “It might be that markets which are more volatile attract high frequency traders,” he said. “We did not find very much causality between volatility and high frequency trading. There is one study that we knew of, where we knew who was trading because we had trade identifiers. It found out that overall volatility and high frequency trading is sort of not related, but more high frequency trading means more good volatility, in the sense that they bring the impact of news into prices much more quickly than otherwise, because their computers have these news readers, and that gets the news into prices quickly. They also seem to reduce the bad volatility, which is a lot of feedback loops, or people reacting to each other and selling, so the more I sell, the more you have to sell. So, computers seem to reduce the bad volatility and increase the good volatility to some extent, but there is no very clear and strong link between them.” Likewise, added Jean-Pierre Zigrand, the evidence suggests high frequency trading improves liquidity, contrary to the perceptions of traditional fund managers, who complain that transactions are invisible. “These are justifiable concerns to have, though they are also unhappy that high frequency traders are taking money from them,” he explained. “In and around 2007, when ‘robots’ came into the markets, illiquidity went up. It is easy to say that robots create

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illiquidity in the markets, but again you have to disconnect the one from the other. When we did that, we found that robots actually help liquidity a bit in the data sets that we had access to, even though markets have become more fragmented. It is a quite remarkable finding." But Jean-Pierre Zigrand did not regard the findings on liquidity conclusive. He was more certain that regulations which suppress aggressive strategies rather than passive ones are poorly designed, because passive strategies are not only less profitable but fulfil the important social function of providing liquidity to end-investors. He added that bid-ask spreads are a poor measure of liquidity because they change too quickly. "We have to go beyond bid-ask spreads into effective spreads, which are a way of trying to capture how big the spreads are, and in fact, where do you trade compared to that spread?" asked Jean-Pierre Zigrand. "And the studies basically found that, even though markets became segmented and it was much harder to find liquidity pools, high frequency traders actually managed to bind all of these various liquidity pools together in such a way that, on average, effective spreads have been reduced, after taking into consideration the difficult times we are in." He added, however, that there were drawbacks to high frequency trading, of which the most important is "doodling" by computers, or posting bid and ask prices at which there is no intention or incentive to execute actual trades. "Things can go wrong in markets if computers do the trading, because computers get into this feedback loop," explained Jean-Pierre Zigrand "A human trader could not possibly get into this amplifying feedback loop, but computers can. Computers can get into these patterns." It was for this reason, he added, that regulators sought to tame an unintended consequence of Reg NMS and MiFID: aggressive selling by high frequency traders, which gave rise to episodes such as the Flash Crash. "The regulators asked us to look into circuit breakers, to decide if they are good or bad, and in general we came out in favour of circuit breakers," said Jean-Pierre Zigrand. "There are some arguments in favour, and some against, but modern circuit breakers are not comparable to old. The London Stock Exchange has very clever circuit breakers, which break quite frequently, and they have intelligent ways of breaking before something bad happens rather than after something bad happens."





The role of human behaviour in causing instability in the banking system

A panel discussion between Professor Mark Fenton O’Creivy of The Open University Business School, Clare Flynn Levy of Essentia Analytics Limited, Dr. Michael Price of Brunel University, Greg Smith, former Goldman Sachs investment banker and New York Times Bestselling Author, and Dr. Mario Weick of the University of Kent, moderated by Professor Jonathan Perks of the Cass Business School.



**Professor Mark
Fenton O’Creivy**



Clare Flynn Levy



Dr. Michael Price



Greg Smith



Dr. Mario Weick



**Professor Jonathan
Perks**

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Jonathan Perks opened by saying it was popularly assumed that some financial organisations had more than their share of business psychopaths, who while very clever and driven, created toxic environments. Such individuals were attracted to high rewards of banking, yet the personal risks were comparatively small. He argued that the culture of banking did appear to have changed recently where leadership and ethics were at last regaining prominence in many areas.

Mark Fenton O’Creedy described his research on trader behaviour and trader personalities. He noted that traders have a similar range of personality traits to the wider population but are on average a little more conservative and a little more risk averse. So why do these apparently normal people end up committing fraud. Fraud needs a combination of suitable targets, inefficient guardians, and motivated offenders. Current reforms aim at the first two but do little about the supply of motivated offenders. It is the combination of intense performance pressures, high bonuses and the weak coupling between skill and performance that generates motivated offenders who fear losing money and status if their performance slips. He also pointed out that the reliance on performance-related pay increases effort rather than performance. **Mark Fenton O’Creedy** added that he thought investment banks had some good managers but had very poor systems for developing and applying management expertise on the trading floor. **Mark Fenton O’Creedy** also said that most analyses of instability in the banking industry focused on the credit cycle, and its constant shifts from boom to bust. He thought there was another way of looking at the problem, which he owed to the sociologist Mitchell Aboulafia. “He talks about cycles of opportunism and restraint,” explained **Mark Fenton O’Creedy**. “His point is that we should stop treating markets as if (a) markets are naturally occurring and (b) that the way in which those markets are constructed is completely exogenous to market activity. Market actors have an interest in restraint and in constructing a degree of trust and in creating an orderly market, so that people will come to trade, but individually they are opportunistic. So that what you see is you see explosions of opportunism, which are then followed by periods of regulation. It seems to me that one of the things we need to get a better handle on is understanding the processes by which restraint and regulation - whether it is self-regulation or external regulation - arise in markets. Social processes are actually tied into the ways markets behave and market activity. By better understanding that, we have got a much better chance.”

Clare Flynn Levy argued that performance-related pay was all upside for the trader: they did not have to repay bonuses if they lost money. She thought success in trading and investment was due to a mixture of luck and skill, and it is hard to distinguish one from the other. The increasingly deep due diligence conducted by investors before allocating money to fund managers was reducing the risk of fraud, thought **Clare Flynn Levy**. She also thought there was a cultural component to ethical behaviour which is easily forgotten. As the sole American on a training course she attended when she was a graduate trainee at Morgan Grenfell in 1995, a question was asked. It was, “What does the term ‘my word is my bond mean’ to you?” “Everybody else answered the question by saying it was very important and meant everything to them. I said it meant nothing to me – that it was meaningless. This of course rang alarm bells for a lot of people. In my case, it was a cultural thing. Anybody who said to me, ‘My word is my bond’ actually meant the opposite, and it was a cynical thing.” She thought it would be difficult to find in banking a universal ethic applicable to all financial institutions in all countries, and that ethics would need to be culturally specific.

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Greg Smith pointed out that in the acuter phase of the euro crisis in 2010, investment bankers told clients the opposite of what they believed to be true in order to make profits, and that this was demonstrably unethical and unfair. He thought the culture of investment banking had switched from long-term greedy to short-term greedy, and that trading revenues were increasing at the expense of banking revenues. **Greg Smith** also thought what distinguished banking from some other industries, in terms of its social responsibilities, was its capacity to damage the rest of society. He thought it would be helpful if investment banks had to sign a contract, when executing a transaction on behalf of, say, a pension fund, that the bank owed a fiduciary duty to the pension fund. "The idea of a fiduciary duty, where you legally owe your client the obligation to do what is right for them, does not exist," said **Greg Smith**. "I guarantee that you if you presented that document - just the one line that said, 'We will do what is in your best interest' - to 1,000 people, you would not find one who would sign it. Now there have been bills floated in Congress to make it a legal obligation for finance people to sign this document. I would say the public should ask more for this because to me it is ridiculous that there is no standard."

Mario Weick suggested that financial markets were built on theories that assume market actors are (1) well informed, (2) make deliberate choices and (3) act rationally. He asserted that behavioural research calls each of these assumptions into question.

Mario Weick posited that there is ample evidence that market participants act on the basis of imperfect information. He referred to surveys conducted with fund investors that show that less than one in five investors can be considered financially "literate". He said that the majority of participants in pension plans are also oblivious to their pensions or the stocks and bonds they are investing in. **Mario Weick** explained that this is not simply down to being uneducated or ignorant; but asserted that our cognitive architecture is designed to be selective. He described a recent study in which a group of radiologists had to look for signs of lung cancer in CT scans. One of the cases had a tiny image of a gorilla planted into the lung, about the size of a box of matches, which is much larger than the nodules the radiologists were looking for. The study used eye-tracking to capture the physicists' gaze. All radiologists were 'looking' at the gorilla, but 20 out of 24 radiologists did not recognise anything unusual. **Mario Weick** explained that this could be explained by a phenomenon called "inattentional blindness" and identified that this also occurs in banking. He went on to assert that this phenomenon is pervasive and shows that we can be literally blind to information right in front of us which says a lot about our ability to make fully informed decisions, especially in fast-paced and complex environments.

Mario Weick went on to suggest that decision-making is more contextual than popularly supposed and that biases are widespread. He referred to a famous study conducted in the 1960s by Stanley Milgram showing that, given the right circumstance most people are willing to administer painful electric shocks to someone else. **Mario Weick** went on to posit that people who are angry or embarrassed or who feel powerful more inclined to take risks. He referred to a study in which investment advisors in banks read a story about someone taking a gamble and winning in a casino, which then led them take more risks in investment decisions.

Mario Weick pointed out that biases are equally common. Most people with a driving licence think they are above average drivers and people often think they are better-than-average in their jobs. He further explained that

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there are many other biases in decision-making including excessive optimism about the time a project will take, a preference for the status quo, and a belief that sunk costs are “free,” encouraging continued investment in failed strategies. He suggested that it is also not uncommon to find that people in power believe they can control the outcome of random events.

When considering what caused the instability in the financial system and what should be done about it, **Mario Weick** advised banks to develop empirically tested incentives (“carrots”) and punishments (“sticks”) informed by behavioural science to change behaviour. He noted that Joseph Stiglitz had argued that regulatory structures need to take into account three things: asymmetric information, moral hazards, and human fallibility. **Mario Weick** suggested that incentive structures should be added to that list to align the goals of market actors, shareholders, and society at large. He asserted that compensation for long-term performance is a case in point.

Michael Price observed that culture and behaviour respond to regulation. He thought science knew enough to change the culture of banks and the behaviour of bankers, and that what was lacking was the application of that knowledge. “Unless you have got tools to detect and deter cheating, you will get cheating, because it is rewarding,” said **Michael Price**. “Once cheating becomes advantageous, cheaters dominate, and co-operators defect. The system gets steadily worse. Cheating is not lazy. It is a very aggressive, high risk strategy. People benefit from the cheating of others, and punishing cheaters is very costly.” Prompted by a suggestion from the audience that bankers take the equivalent of the Hippocratic Oath sworn by doctors and be struck off by a council of peers in the same way as doctors are struck off by the General Medical Council for malpractice, he pointed to the training of army officers as another instance of proper leadership training backed by sanctions such as courts martial. “In banking, people are not going to jail, or very rarely are they going to jail,” he said. “They might go and sit in parliament and have a difficult discussion with a number of MPs, but they then walk away with £24 million from the last year and £24 million from the year before that. Banking carries on rewarding unhealthy and toxic behaviours. Having been involved in ethical training, I think it is essential that there is something done about it.”





Risk culture panel:

Learning from other industries

A panel discussion between Dr. Craig Carr of the Royal Marsden Hospital speaking in a strictly personal capacity, Dr. Jop Groeneweg of Leiden University, Dr. Jamie MacIntosh of University College, London, also speaking in a personal capacity, and Captain Dave Prior, Director of Safety at Easyjet, moderated by Dr. Simon Ashby of Plymouth Business School.



Dr. Craig Carr



Dr. Jop Groeneweg



Dr. Jamie MacIntosh



Captain Dave Prior



Dr. Simon Ashby

Risk culture panel: Learning from other industries

Simon Ashby presented on “risk culture in financial organisations.” He began by pointing out that bankers, regulators and academics had all attracted a share of the blame for the financial crisis, but he thought finding people to blame was a mistaken approach. “You cannot easily blame individuals because most organisational crises, whether they are financial or non-financial, are actually social phenomena,” said **Simon Ashby**. “They are cultural phenomena. They are things that arise due to a range of different people who are operating within one or more potential cultures.” He argued that the real causes of the financial crisis lay in the interaction between people and institutions, adding that it was a “myth” to regard financial services as different from other financial sectors, and the sources of crisis in the industry as peculiar to it. “If you look at the financial crisis in any depth, you will see that the fundamental causes of the financial crisis are the same as the causes of crises in many other sectors,” said **Simon Ashby**. “If you look at, for example, medical crises such as the Bristol Royal Infirmary case, or the recent Staffordshire case, or if you look at airplane crises, such as the recent issues with Boeing, or if you look at a petrochemicals, such as the Piper Alpha disaster, you will find at the heart of those crises cultural issues, issues around people, issues around processes, issues around systems. The fundamental cause of most of these crises is the same.” He deplored the “fallacy” that risks in banking are different, being market, credit risk and liquidity risk. “It just is not true,” said **Simon Ashby**. “If anybody can come to me today with a financial crisis that was not at its heart operational risk, rooted in terms of people, processes, systems and external events, I will buy you a pint quite happily, or a soft drink of your choosing. I can guarantee you there is not one. Every single financial crisis - and I include the global financial crisis - was fundamentally the result of operational risk. We need to remember that in the financial services sector, we have these market risks, we have these credit risks. But really the most important risk we have is operational risk, which is no different from any other sector.” He deplored the lack of experience of other industries among people working in financial services, and the consequent inability to draw the right lessons from more resilient industries as opposed to thinking that “running a bank is like a running a supermarket.” **Simon Ashby** said learning from other industries was not just about good practice, but about learning from the mistakes of other industries as well. “Bob Diamond could have learned a lot from Tony Hayward,” he said. **Simon Ashby** also noted that there is an extensive literature on safety culture, including entire journals devoted to the subject, and yet the risk and safety culture in financial organisations is even now under-developed. If the financial services industry was prepared to learn from other sectors, he said, it would acquire some necessary fresh thinking about how to build risk cultures and models that are more resilient. “There is a good challenge not just for the banking sector but for academics, and particularly finance and economic academics, who still seem to think that the world works according to some perfect economic model and refuse to publish work that suggests an alternative point of view,” he said. “That really has to stop if we are going to progress as a sector. So, come on guys and girls. It is about time we accepted the fact that there are different schools of thought out there.”

Craig Carr explained that he worked in the critical care unit (CCU) at the Royal Marsden, which is the highest risk environment for patients, and that health care is (like financial services) a heavily regulated industry. “At the present time there are huge tensions in the healthcare system around risk and risk management,” he said. “There are dinosaurs like myself. I grew up and trained to believe that risk in healthcare is inevitable. A lot of it is inherent and cannot be managed out of the system and, as long as it is understood and transparently discussed and agreed in advance, then even very high risks are quite acceptable.” As an example, **Craig Carr** explained that he was prepared to anaesthetise and treat patients refused anaesthesia for surgery by younger colleagues who thought they would not survive the procedure. “If you, as an individual, were told that without surgery you

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would have 100 per cent mortality in three months' time or you could have a 50 per cent risk of mortality during your operation on the table but, alternatively, if you did not die on the table you probably had a 50 per cent three or five year survival," he said. "What would you pick?" **Craig Carr** thought patients should be free to take the risk, but the increasingly risk-averse culture of the National Health Service (NHS) was eliminating the choice, largely because it risked individual clinicians and the hospital acquiring a higher mortality rate and clinicians and managers having to account for it. "In managing risk, the first thing we need to think about is: risk from whose perspective?" he said. "The risk from my perspective and damage to my reputation is very different to the risk from the patient's perspective." Accordingly, **Craig Carr** advised financial services against adopting the risk management practices of the NHS wholesale. However, he did think professional accountability to an external regulator was valuable. "If I am consistently bad, or sufficiently bad just once, I can be barred from practice, with damage to my livelihood and reputation for the rest of my working life," explained **Craig Carr**. "I am beholden to my regulator, the General Medical Council (GMC), ahead of my obligations to my employer. So if I see risks occurring to patients, I have to report them to my employer but, if I feel my employer is ignoring them, I am obligated by the GMC to report them externally. Failure to report can result in my being struck off." He said that in 2012, 1,500 of the 218,000 registered doctors were investigated under fitness to practice regulations, and 39 were struck off the GMC register, after a rigorous investigation. He noted that, by contrast, it was the risk managers who raised concerns about excessive risk-taking at banks (e.g. Bank of Scotland) who lost their jobs. **Craig Carr** also thought the financial services industry could benefit from the weekly multi-disciplinary team meetings hosted in the CCU or oncology group at the Royal Marsden, at which all the patients in the care of the hospital are discussed. "We look at what decisions we are making for those patients," he said. "I will have my decisions ridiculed at times, and my suggestions ridiculed, and we come to a sort of group consensus on the best thing for each patient, including taking very high risk decisions, with the patient's agreement. It is quite time-consuming, but you learn a lot, it reduces the variance in practice in medicine, and it has certainly improved outcomes." A third medical practice which **Craig Carr** thought financial services could adopt was allowing the people that operate the infrastructure (e.g. patient data storage systems) to report directly to the non-executive directors of the hospital, ensuring the non-executive directors receive unfiltered information. Fourthly, he advised against multiple regulators, and making "systems" rather than individuals accountable. "There is a real risk of the blame-free culture, which is very properly designed to promote open reporting, becoming a responsibility-free culture," said **Craig Carr**. Fifthly, he advised financial services risk managers to manage the expectations of their customers. "The expectations of patients and staff are increasingly unrealistic and sentimental," he said. "We have patients who want major surgery with no risk and, if something goes wrong, it is not inherent risk. Someone has to be blamed. Likewise, we see staff who are super-sentimental. Whenever you say, 'You did something dangerous to that patient,' that is labelled harassment. 'How dare you question me? I do not like this. You disrespected me.' Finally, **Craig Carr** advised a proportionate response when mistakes are made, and urged regulators to take decisions in the light of the system as a whole rather than from their own narrow perspective. He cited the regulatory response to the single death which had occurred in the last four years directly as a result of a patient being given incompatible blood (due to sample mislabelling) as case in point. "They are recommending that we cross-match everyone twice, two samples, taken by two different people at two separate points in time," said **Craig Carr**. "That is going to cost about £80 million per annum. One can hardly say that is a rational response. It is rational if you are told that you have got to get rid of that risk altogether (regardless of cost). £80 million is a hell of a lot of money that can do a lot of good if used in other ways."

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Captain Dave Prior explained that any company wishing to run an airline in the United Kingdom has to transform the regulations issued by the Civil Aviation Authority (CAA) into an operations manual, on the basis of which the CAA issues a licence to operate. “What the operator then has to do – must do – is create the right cultural conditions to ensure that safety happens,” he added. “The way that happens in our industry is by what we term ‘the just culture.’ That is not the no-blame culture that **Craig Carr** alluded to. We have evolved through that. The idea of ‘the just culture’ is that you can make an honest mistake or an omission and that is acceptable. Equally, you cannot make a wilful violation, because that will not be tolerated. The way that the organisation deals with those things is a measure of the health of its safety culture, because it allows individuals to report problems and issues, which ultimately gives you visibility into risk. If you have the visibility into risk, you can then take the appropriate actions to prevent any problems.” At Easyjet, said **Dave Prior**, the senior management and the staff also understood that the continued growth of the company depended entirely on their unwavering commitment to safety and risk management. “Everybody feels the heat of safety,” he said. “There is individual responsibility for safety delivery within the organisation.” **Dave Prior** also noted that, unlike high frequency traders, airline pilots never give the computer full control of the airplane. “There is always somebody there to make an intervention – namely, the pilots - at the appropriate moment,” he said. **Dave Prior** divided regulated aviation enterprises into three groups. The first have impressive buildings, people and systems, and appear excellent on the surface, but underneath the operations are not. Their goal is to treat passing a regulatory inspection as evidence that the organisation is safe. The second group have less impressive buildings and systems, but committed people and a consciousness that their licence to operate may be restricted or removed if they do not meet regulatory standards. “Within those organisations, the culture was different,” explained **Dave Prior**. “There was something about them. There was a freedom – a freedom of the individual to report problems. They had a good handle on their data, but actually there were real, visible signs that things were taking place in the airline that left you with the feeling that, ‘Yes, this is an airline that has a grip on safety and it knows its risks.’ And, yes, we would find things, but generally of a minor nature. And, in fact, you would often find those operators themselves would offer up to you areas that they felt that they could perhaps do a little bit better.” The third group already had a poor relationship with the regulator, and their main goal was to pass the inspection as quickly as possible. “Invariably,” said **Dave Prior**, “those operators at some point down the track started to have problems.” In contrast to the financial services industry, where banks and regulators are often at odds, he also thought the industry had a positive relationship with the CAA as regulator. “The CAA is a very mature regulator,” said **Dave Prior**. “They can deal with operators in a step-wise manner. It is not a case of switching the certificate on or off. There are various levels of restrictions that can apply and, in doing so, the regulators have got real leverage because the people that they are regulating have got commercial pressures. They have got to deliver profits. They have got airlines to run and schedules to meet, and so on. There is no point in regulating if you do not have leverage.” Finally, he alluded to a cultural difference between the aviation industry and financial services. “When I was a trainee pilot, we did an aerobatic sortie and came back,” said **Dave Prior**. “On the top of the airplane dashboard there is an accelerometer. Basically, that tells you how much G-load you pulled during the aerobatic manoeuvres. It is a really important piece of kit. During the shutdown checks my instructor was giving me the debrief, and I went to reset the accelerometer. And he put his hand on me and he said, ‘Right, Dave. Do not reset that.’ He said, ‘The reason we do not reset that is because the guys that follow us will want to know if we overstressed the airplane.’ That informs the way it is in aviation for me. It is a good example, whenever we are out there, of us constantly thinking of everybody else.”

Risk culture panel: Learning from other industries

Jamie MacIntosh spoke from his experience as a national security adviser to the United Kingdom government. Referring to the statement made by Andy Haldane, executive director for financial stability, that the financial crisis had cost more than the war, **Jamie MacIntosh** suggested that it was “a huge admission.” He said “the trouble for me is, ex-ante, we warned it was coming in June 2001, officially. We used some very simple models. This warning followed the fuel protests, where we were asked to look at all networks of any sort. We reported back in 2001 that the number one danger to the United Kingdom - of gargantuan proportions - was financial stability, because of the group-think the system was already suffering from. It was evident, and we did nothing. To come back to the question asked by the Queen, ‘Why did nobody see it coming?’ the answer is that some of us did. But for mainstream risk managers, the risk was all fragmentary. We had lots of talented people looking at it, but nobody could put the fragments together. They had no holistic picture. They had no imagination. They could not see the systemic according the British Academy’s response to the Queen’s question.” The real (scientific) issue is how do we learn to overcome perfect hindsight with a more pragmatic approach to imperfect foresight that doesn’t simply extrapolate the present with false and error prone precision. So whatever frustration many of us felt at not being heeded, some of us are left understanding how great the responsibility is for building confidence in better foresight. It’s the real trick to take. “I told you so” is no substitute for learning that lesson. He called for greater use of a plurality of models (including agent-based modelling), and a shift in risk management within the financial services industry towards resilience rather than protection. In order to accomplish these changes, **Jamie MacIntosh** urged the economics profession to jettison its current faith in scientism, or the belief that a narrow selection of scientific methods based on ideal assumptions can uncover laws of cause and effect in economies, and that predictions can be made on the basis of those laws. “We are still dealing with an environment in which we have not come to terms with Keynes’ Treatise on Probability, never mind the General Theory of Employment, Interest and Money,” he said. “I would certainly urge that those who are interested to look more at a synthesis of Keynes, Knight and Schumpeter than at neo-classicism. The question why complex adaptive systems are resisted by orthodoxy is a good one. Asking it reminds me of Machiavelli, who is always a very handy person for those of us involved in statecraft, and it is worth quoting. ‘There is nothing more difficult to take in hand and more perilous in conduct or more uncertain in its success than to take the lead in the introduction of a new order of things, for the reformer has enemies in all those who profit by the old order, and only lukewarm defenders in all those who would profit by the new order.’ This luke-warmness arises partly from fear of adversaries and partly from the incredulity of mankind, who do not truly believe in anything new until they have had actual experience of it. Where are those agent-based models? Why are they not in use?”

Jamie MacIntosh also drew a distinction between “risk” (which economists model) and “uncertainty” (which is more reality), and suggested warfare provided a suitable analogy for uncertainty in financial markets. “War is the province of uncertainty, not just risk,” he said. “War is about a tumult of innovation. In some ways, if we can harness that tumult of innovation peacefully, we might find some of the answers to growth. The key is to start funding truly transformative research, where we move into navigating the uncertainty of innovation pathways, which has been stopped largely because of the paralysis around particular attitudes to risk. If we can crack this age-old question about the types of modelling, the plurality of modelling and how they support real decision-taking in realistic environments, we stand a chance of being put back on a growth trajectory.” **Jamie MacIntosh** also advised financial services companies to get into the habit of sharing capabilities, such as forensic accounting and computing skills, to increase their resilience in a crisis. “Sharing information is worthy but it’ll be mutual aid with real capabilities that matters”.

Risk culture panel: Learning from other industries

Jop Groeneweg shared his experience of health and safety in the petro-chemical industry. He said that what surprised him most, when he started advising financial services companies on the human dimension of risk, was the lack of linkages between the primary work of the firm and the management of the risks that work created. "In my world, risks are bad, but risk management is very closely related to the control you have over what I would call your core activity or primary process," explained **Jop Groeneweg**. "If you are a refinery, refining crude into diesel that you put into your car is your primary process. Risk management is a tool to compensate for deficiencies in that primary process, but the primary process is the key to success. Risk management can never be a success factor. Actually, if you have a lot of risk management, it probably means that you have got a lousy primary process - just as the amount of marriage therapy is not necessarily indicative of the quality of your marriage. Without a proper understanding of the primary process, you cannot possibly manage the risk associated with it." He argued that the same principle should be applied to the financial services industry, which used a variety of tools and techniques to turn a commodity – namely, money - into profit. "But if you ask experts how this is done, you get remarkably evasive answers," continued **Jop Groeneweg**. "They say the complex algorithms and innovations that guide financial trades are just too complex to understand. As long as profits are produced, senior managers do not seem to be particularly worried about that. In the petro-chemical industry, you have completely the opposite attitude. Imagine I arrived at a refinery with a container with an input and an output valve and told the management of the oil company that this remarkable invention is actually a mini-refinery. Of course, I do not tell them how it works. They would not understand it anyway, so why bother? I illustrate how it works and, yes, crude oil goes in and petrol comes out. So everybody is extremely happy. But no respectable oil company would buy it because they would not know what the container does and therefore could not assess the risk associated with the production process. In my world, that is called a showstopper. There is no 'so long as the music is playing, you have got to get up dance' mentality. It just stops if you do not understand it." While he agreed that the petro-chemical industry is not without flaws, it sought always to search for what went wrong at the primary process level, as BP did after the spillage in the Gulf of Mexico. "The whole industry has been completely overhauled in their approach to flow monitoring just because of that incident," explained **Jop Groeneweg**. He also thought the regulatory management of the risks of the financial system - such as capital buffers against volatilities whose origin is not understood but which are based on correlations derived from historical data - were remarkably crude by comparison with those in the petro-chemical industry. **Jop Groeneweg** criticised the readiness to blame regulators when something went wrong. "In the oil and gas world, you never hold the regulator accountable for anything," he said. "Managing your primary process is the responsibility of the company and the management, and never of the regulator. Regulators regulate what they can understand, and in the oil and gas industry regulators have a very limited understanding of the business. The regulator has no influence whatsoever in the way the primary process of an oil refinery is run simply because they do not understand it. Any financial institution that says, 'I want the regulator to regulate me,' is giving off a signal of incompetence, a signature of not being in control." Lastly, he criticised the willingness to blame individuals, such as rogue traders. "If you blame the London Whale, you take away the management responsibility," said **Jop Groeneweg**. "If I am running a refinery I have twice the output of another refinery of the same kind run by a colleague, I will within five minutes have a telephone call from auditing saying, 'We will visit you next week because there is something very wrong here.' Would a financial services company have that same attitude with someone who turns out half the profits of the company? In general, the attitude would be different. That is the culture of an organisation. That is safety culture."

Risk culture panel: Learning from other industries

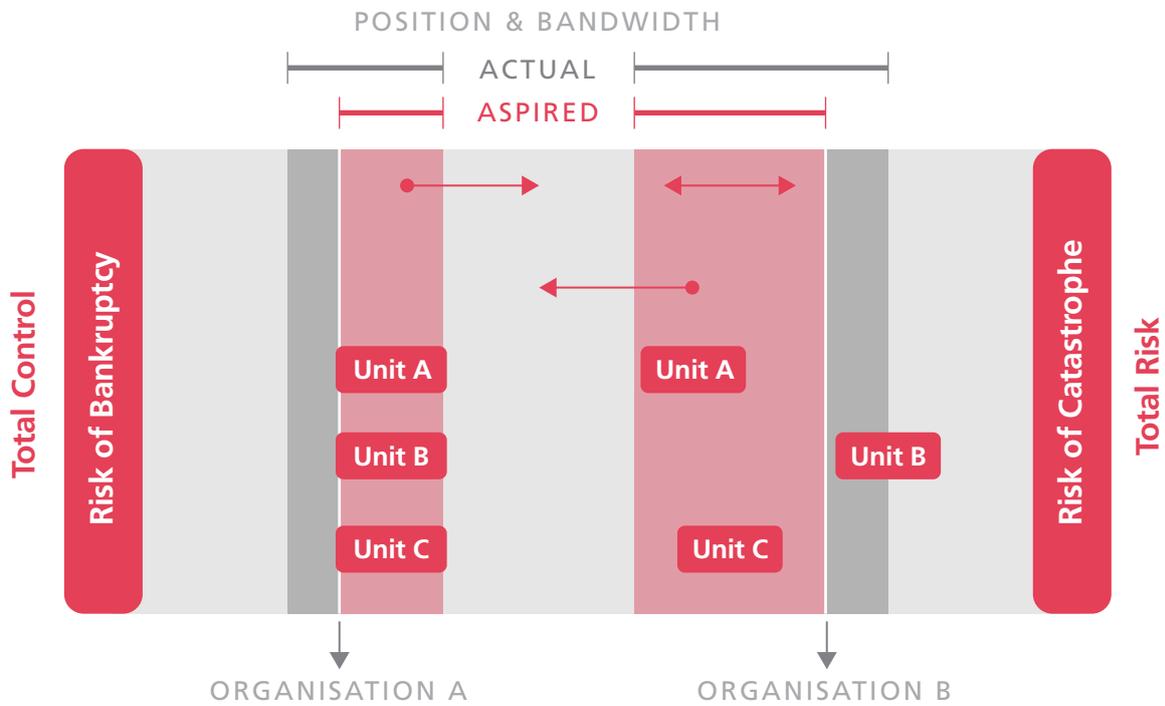


Figure 1. Risk Culture in Financial Organisations (Ashby, 2013)



The Great Debate:

Four Perspectives on the Great Financial Crisis

The financial crisis was not just a crisis for the banking and securities industries. It has also created an intellectual crisis in orthodox economics, which failed to anticipate the crisis, and whose axioms have borne much of the blame for what went wrong in financial markets.

The Great Debate held at the Divinity School in Oxford on 29th May 2013 saw four schools of economics contest which of them has the best explanation of the financial crisis, and which the most effective long term solution to instability in the global financial system. Christopher Allsopp and Tim Congdon argued for the Keynesian and Monetarist schools of economics respectively, Sean Corrigan gave the case for the Austrian view of how economies work and Dooyne Farmer argued that economies are complex, adaptive systems which have more in common with naturally evolving systems than the efficient, rational and equilibrium-seeking markets of classical economics.

Overseeing proceedings and keeping order at the Divinity School was Eric Beinhocker, Director of the Institute for New Economic Thinking.

After a lively, provocative and informative debate the audience voted for the complex adaptive systems school of thought with the Austrian school coming in a close second.

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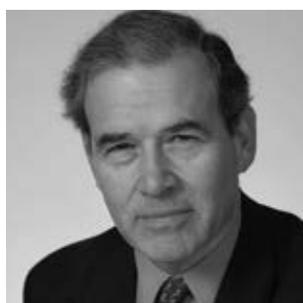


BNY MELLON



Regulation versus innovation versus ethics – what mixture can fix the finance system?

A panel discussion between Anthony Belchambers of the Futures and Options Association, Bruce Cahan of Stanford University, Sean Park of Anthemis Group and Dr. Victoria Saporta of the Bank of England, moderated by Dr. Christopher Houghton Budd of the Centre for Associative Economics.



Anthony Belchambers



Bruce Cahan



Sean Park



Dr. Victoria Saporta



**Dr. Christopher
Houghton Budd**

Regulation versus innovation versus ethics – what mixture can fix the finance system?

Christopher Houghton Budd opened the panel by arguing that creating a new future for finance entailed the use of the imagination. John Maynard Keynes attributed to Isaac Newton what he called “muscles of intuition,” he said, to capture how the great scientist had imagined his discoveries before writing them down as equations. **Christopher Houghton Budd** also thought that Aristotle had an important contribution to make to the debate, because of his emphasis on the moral character. “Aristotle had a very interesting thought about economics embedded in his ideas,” he said. “And that is that human beings have character.” In particular, he said, Aristotle thought the liberal man is the man who knows how to give the right amount of money to the right person in the right way at the right time.

Victoria Saporta argued that ethics, innovation and regulation complement rather than conflict with each other if they are done properly. She distinguished between good innovation (less risky payments systems, cheaper trade finance, securitisations, and balance sheet restructurings that enable firms to stay in business) and bad innovation (complex and opaque financial instruments that generate pay-offs that are almost impossible to assess in a model with any accuracy and lack of “skin in the game,” such as lack of exposure to loss in rating or originating mortgage-backed securities). “Ahead of the crisis which started six years ago, we saw the two elements - complexity and lack of skin in the game - combining in a highly explosive mix,” said **Victoria Saporta**. “CDOs, CDO squareds and cubeds of sub-prime mortgages originated by brokers who pass them through to investment banks who package them, securitise them once, securitise them twice, and then sold them to off balance sheet vehicles of highly leveraged banks is the pertinent example. There was no skin in the game for the brokers who originated the sub-prime mortgages. Those who packaged them added hefty fees that increased with the complexity of the structure and willingness to retain risk. And those who bought them, which were often banks, held them off-balance sheet so they could avoid regulatory capital requirements, which meant that they could leverage them up multiple times. Beyond that the bankers did not seem to care. Now, this raises the question: why do bankers not care much? One of the fundamental reasons, in my view, is because they won if the gamble paid off, and the taxpayer lost if they did not.” She added that banks which were Too Big to Fail also suppressed innovation, because they enjoyed a funding advantage over smaller and more innovative banks. “So regulatory reform that could solve Too Big to Fail can only be good for innovation,” said **Victoria Saporta**. Her suggested remedies were limits on excessive leverage of bank balance sheets; structural change to ring-fence utility banks from investment banks, as proposed by John Vickers and Erkki Liikanen; and an effective bank resolution regime. “If we want an innovative financial services industry that supports growth, it is crucial to complete the journey of regulatory reform,” said **Victoria Saporta**. “The two are not in conflict.” In response to a question from the floor, which suggested the Basel capital adequacy rules encouraged “unethical” behavior and useless innovation to get around capital constraints, she drew a distinction between the Basel II and Basel III regimes. “Basel III mainly tried to raise capital requirements and introduce simple leverage ratios which do not depend on risk weights” she said. “What it did not do is change the structure of the regulatory framework.” That framework, she added, created complexity and gave a capital advantage to large banks which could use internal models to assess risk and allocate capital to them. “All that was done before Basel III,” added **Victoria Saporta**. “There is a right time to actually review them, and indeed a number of commentators have spoken about the need to simplify the regulatory framework. Complex regulations, like complex taxation, can be manipulated. Regulatory arbitrage means finding loopholes which enable you to avoid regulation while taking on exactly the same risk

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profile as before.” She added that, since taking over responsibility for regulating banks from the Financial Services Authority (FSA), the Bank of England was aiming to replace a box-ticking approach to regulatory compliance with a “more judgement-based approach.”

Sean Park explained that he had left the investment banking industry in 2006 partly because innovation focused solely on financial products. He said many such innovations, including CDOs, were initially beneficial to society and the economy, but Too Big to Fail banks then captured the innovation and drove it to excess. “I remember when J.P. Morgan did the first big loan securitisation,” recalled **Sean Park**. “If you are a finance geek, it was a thing of beauty. It really did make one plus one equal three. Investors were winners, borrowers were winners, and I think J.P. Morgan as the arranger of that transaction made a significant profit. No one lost. But, like the proverbial frog boiling in a pot, after about two or three years, the arbitrage disappeared. It was arbitraged away, as it should be. But did the banks stop? No, they continued. They added more leverage, and changed the pricing, and the momentum of that market was such that by 2005 and 2006 it bore no resemblance to the original purpose for which it was developed. Leverage plus hubris equals a disaster. It is almost a certain thing. One of the reasons I left the mainstream industry is that it became apparent to me that the most successful bankers would be those that spent all their days thinking about how to get around leverage regulation.” He argued big banks actually favour regulation, because it creates opportunities, and relieves bankers of the burden of making ethical judgments. “When big banks complain about regulation, it is like being rabbits saying, ‘Please, please, do not throw me in the briar patch,’” said **Sean Park**. “Whereas it is a pain in the ass for them, and it costs them a lot of money, they can throw money and bodies at it and use that to their advantage. Anyone with children will know this, but the more rules you set, the more it becomes obvious that, if it is not proscribed, it is permitted. Bankers say, ‘Well, if there are all these rules, let us look at what we are allowed to do, because we are not allowed to do very much, and let us do that without asking the question of whether that is the right thing to do.’” He advocated simpler measures to contain leverage than those proposed in Basel III, such as gross leverage ratio caps. But **Sean Park** also argued that regulation should encourage a major shift in the business model of the banking industry, which he believes is under way anyway. “There is a secular change in the economy going on, from an investor economy to an information economy, and that is going to change the nature of pretty much every industry, including finance,” he said. “That will eventually lead to a different type of finance, where the vertically integrated models of the industrial age are replaced by the modular models of the information age. That may take some time.” He thought regulation could accelerate the transformation by encouraging competition. “It should be very, very easy to get a new banking charter,” said **Sean Park**. “That might sound atrocious, but limit the size of the balance sheet. We seem to be comfortable with big banks losing billions and billions of dollars, but enormously afraid of a new bank starting up that might have a balance sheet of £50 million. Even if some of those are fraudulent or incompetent, the risk to our economic systems is tiny compared to the risks that we are running now. What we need is more competition in this market. Anyone with a good character and a little bit of capital should be able to set up a bank overnight. And not a bank that can do anything, but a bank that might be limited in the size of its balance sheet, might be limited in the kinds of transactions it can undertake. Right now we have this backward system where you basically have to spend £50 million building zero added value just replicating what the existing banks have in terms of infrastructure and regulatory compliance before you can open the door. If you have a group of people that have good character,

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that have some skin in the game, some capital invested, it ought to be as easy for them to open a simple bank as opening any other company. And if they screw up, they screw up. They get closed down. If they are fraudulent, they go to jail. You do not need to regulate against fraud. There are laws already. You arrest people.” He also argued that competition would make regulation simpler and more effective. “If the banks are small, and there are many of them, I would argue that regulating a thousand or even ten thousand small, simple banks is a hell of a lot easier than regulating one Citigroup,” said **Sean Park**. He conceded that competition increased risk, but argued that regulation could not eliminate it. “We are trying to take all the risks away from everything,” he said. “Risk is not a bad thing. It just is. It is not good. It is not bad. It is part of what makes up our planet and our life. And if we try to manage all of it, it is like thermodynamics: the conservation of risk. It does not go away. We just hide it or put it in different places and maybe make it worse by concentrating it. We should not do away with regulation, but trying to regulate all the problems that are caused by the oligopolies and their rents is a losing game. You will always be behind.” **Sean Park** also thought buyers of banking products needed to take more responsibility for their actions. “We need a culture that responsabilises the consumers of financial services so that they cannot be completely de-responsibilised,” he said. “People say, ‘Oh, I will do this, and if it is stupid, or it does not work out, whoever is providing this has probably done something wrong and I will sue them and get my money back.’”

Bruce Cahan observed that as the world economy is moving from the industrial into the information age, banks should use information to transform the product experiences for their customers. “Innovation is not running analogue bank processes and services faster in a digital form,” said **Bruce Cahan**. Banks could, for example, use the information they possess about the banking activities of food manufacturers and restaurants to reassure customers that the cereals that went into their breakfast were organically sourced or that the steaks served by a restaurant were ethically sourced. **Bruce Cahan** added that innovation, ethics and regulation are not contradictory, but mutually supportive, as a braided whole wherein the bank as an institution is safely profitable, the customers are treated fairly rather than as predatory bait, and the bank’s and its customers’ impacts on regional quality of life are sustainable. “Ethics is not about meeting the minimal standards of regulations borne out of past crises in an industry-fuelled group writing exercise known as lobbying and campaigning finance,” he said. “Regulation results from the lack of self-managed innovations that yield safety by design. Think of adding more highway road signs and expecting safer highways, versus making self-driving cars that can automatically take over when it happens that a human driver has enjoyed too much to drink the previous night.” **Bruce Cahan** shared that he has co-founded a programme at Stanford University to research and create a “sustainable banking” culture, and that he envisions a Sustainable Banking Institute to educate and professionalise a new “cadre of innovative, ethical bankers and bank technologists” which would test out their training and tools in a “teaching hospital bank (GoodBank™(IO))” whereby the best practice ideas and techniques can be licensed to and shared with other banks. His chosen analogy for the initiative was the medical profession. “We train doctors in teaching hospitals to be doctors,” said **Bruce Cahan**. “Why? Because it would be dangerous to pass out medical degrees, hand people scalpels, and expect good outcomes. How do we innovate and educate bankers? We give MBAs a £500 million portfolio, say go make 20 per cent return on investment however you can, and we will pay you a fat bonus. This is not working for keeping bankers ethical or innovative. It is also camouflaging and generating large negative economic, environmental and social externalities.” Just as the medical physician has used teaching hospitals to develop best practices, and the diagnostic and feedback technologies to know

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whether physicians can do more good than harm for their patients, **Bruce Cahan** pointed out that “ethical bankers” need the culture and tools to operate according to their own form of Hippocratic Oath.

Anthony Belchambers countered that “ethical behaviours have got to go with the grain of commercial objectives in a market economy,” which he named as growing the business and making money, and running risks. “Risk is the engine oil of growth and we must always bear that in mind,” said **Anthony Belchambers**. “But how you set about those objectives is where moral, social and systemic responsibilities begin to kick in.” He argued that responsibilities fell on bankers to balance short term gains against long term strategy; to avoid excessive leverage; to eschew the temptation to “outsource [their] business conscience to compliance with external rules”; to make a reality of their ethical codes of conduct by aligning them with regulatory principles, writing them into contracts of employment and enforcing them rigorously, rather than using them as “a marketing tool to gain new business”; and recognising their wider obligations to the stability of the financial system. “I suspect that during the crisis few boards of systemically important institutions asked themselves what would this do to the financial system (and not just shareholder value) if it went wrong,” said **Anthony Belchambers**. “That is now a question every systemic institution must ask itself in future.” He put a particular onus on the non-executive directors of banks to better challenge excessive risk-taking, conflicts of interest, and what he called “CEO risk,” or business domination by a single individual. However, **Anthony Belchambers** also assigned responsibility to regulators to ensure banks and “legitimate shadow banks” were proportionately capitalised without impairing their ability to lend. “It is worthwhile remembering that at the time of the crisis we had hundreds of regulatory authorities, thousands of supervisors, and tens of thousands of rules,” he added. “Yet the crisis still happened. So this is telling us that regulation alone is not the answer.” He added that consumers and politicians were not blameless either. “At a time of easy money everyone was in the spend game,” said **Anthony Belchambers**. “Governments were at it. They were spending and borrowing with little thought for the economic consequences. Consumers in the high street were converting the equity in their houses into non-investment value consumer durables. And those who feed the high street got used to completely unreal levels of production and consumption at a time of easy money. As I say, everybody was at it!. Where the banks failed to do what they should be best at – credit risk management ie “holding the line”. He added that governments must desist from incentivising banks to engage in high risk lending to meet populist political objectives, especially when they have no “skin in the game”, as the United States government did with sub-prime mortgage lending in the 1990s to enhance house ownership growth. **Anthony Belchambers** also warned politicians against mistaking restructuring for genuine reform. “Restructuring after a crisis is always the “action man” response, is it not?” he asked. “Every politician likes to say, ‘I have moved these building blocks around and this will not happen again.’. Restructuring is a visible, but superficial, sell to the public. But actually, if you do not get high standards in business practice, then all you are doing is diversifying the problem. Contrarily, if you do get these things right – if we do cure the problems that were identified as leading to the crisis – then we have to ask ourselves the question, ‘Do we need to restructure at all?!’ “What is the risk left that has not been addressed which justifies a restructuring?” **Anthony Belchambers** added that complex regulation was as harmful as complex innovation, not only because it encouraged regulatory arbitrage, but because it leads to compliance confusion, costly duplication and rules’ contradictions set by different regulators operating in national siloes. “Frankly, I believe legitimate regulatory arbitrage is a good discipline on regulators,” he said. “It is a business reality check on repressive or overly

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zealous regulation. If businesses can relocate in order to secure tax benefits, preferred employment law and location advantages, etc, why not for regulatory advantage? After all, the international standard setters are coming up with a common threshold of regulatory standards which will need to be adopted by all jurisdictions. Isn't the ability to move businesses and people around a large driver of the European "passport" and the single European market? Politicians and regulators need to be very careful, when curbing relocation rights, not to blur the boundaries between legitimate avoidance and unlawful evasion. Politicians and regulators also need to be careful about driving in excessive "no risk" regulation in what is a largely a risk-based market economy". He added that consumers should be protected from dangerous innovation, but the approach should be akin to the kind of rules which protect retail shoppers in the high street. "A percentage of retail goods for sale may be useless but they are also harmless": said **Anthony Belchambers**. "It is not the role of regulators to kite-mark performance and the beneficial nature of new products and services, but to ensure that they are not harmful or missold to consumers. Good regulation is not about market compression and it does need to better recognise market power, consumer choice and the economic advantages of the competitive provision of products and services."



Abstract

Banks, commercial and investment, are proving dysfunctional in the 21st Century. While, such banks use digital technologies to promote efficiencies, friction and cannibalage at high speed with massive scale and risk.

Withoutstanding government supports, banks seem unwilling and unable to move to a culture of bank research in the causal connection of credit to real economy impacts. Iterative design of sustainable bank models and services, rapid prototyping, testing and deployment. As "sustainable bank" innovation is the exception, regulators come to fear innovation in bank services, it to see them as at the fringe rather than core.

As a design experiment, Stanford Engineering Visitor Scholar Bruce Cahlan and Associate Professor Michael Lopez proposed creating a Three-Step Exploration of Sustainable Banking in order to see the greater safety and user enjoyment of high-transparency, impacts-aware banking. Preliminary discussions with large banks known as Systemically Important Financial Institutions (SIFI), cooperative and niche banks, financial technology (FinTech) startup founders, Big Data analytic service providers and bank regulators suggest that a teaching hospital bank extending a University learning lab environment would be a welcome option for responsible bank innovation to gather in multi-disciplinary research.

Background

Following the 2008 Banking Crisis, Systemically Important Financial Institutions (the large commercial and investment banks) became ever larger, their staffs downsized and their capacity to innovate the future eroded through or based on obsolete sustainability frameworks declined. Simultaneously, a group of bootstrapped and venture-backed startup startups began to offer innovation in payments/remittance, Small to Medium Sized Enterprise (SME) lending, crowd-funding and peer-to-peer matching of individual borrowers and lenders, microfinance, currency exchange and other services. These startups became more customer-centric, more transparent, more agile and more innovative than the large banks.

These startups became more customer-centric, more transparent, more agile and more innovative than the large banks. They offered services that were more relevant to their customers and more aligned with their values. They were also more resilient to economic downturns and more adaptable to changing market conditions. This led to a growing market for these services and a corresponding decline in the market share of the large banks.

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Structural innovation— what should the system look like?

A panel discussion between Dr. Paul Woolley of the London School of Economics, Dr. Thomas Mayer of Goethe University, Frankfurt, and Professor George Selgin of the University of Georgia, moderated by Greg Smith, author of “Why I Left Goldman Sachs”.



Dr. Paul Woolley



Dr. Thomas Mayer



Professor George Selgin



Greg Smith

Structural innovation— what should the system look like?

“Prior to 2008 a lot of people in this room would have said they were big believers in free markets, and so would a lot of politicians around the world,” said **Greg Smith**. “But when we were faced with the catastrophe starting in 2007, the truth became that, faced with the true idea of free markets where you really do let systems die, our bluff was called. We proved that in certain instances we were not free market practitioners.” In his judgment, the financial industry was no longer operating in a free market system, because the system was not open to competition. **Greg Smith** listed four major problems. First, complexity, especially in the derivatives markets, where tools originally devised for hedging purposes were now used to “bamboozle” and “deceive” clients, especially pension funds. “By far and away the biggest investors in the marketplace are the investors that represent normal human beings who have no knowledge of financial markets,” explained **Greg Smith**. “And by that I mean the pension funds that represent teachers, fire-fighters, policemen. I mean the philanthropies. I am astounded how many people do not know that charities are also customers of Goldman Sachs, and Morgan Stanley, and J.P. Morgan. Any major philanthropy or endowment or foundation may have billions of dollars, and they are trading the most complex derivatives you could think about. Now, you have to ask yourself the question, are these derivatives being used to help the charity, or to help the University of Oxford, or to help the teachers’ pension fund? I would argue no longer is it being used for those things. It is being used to potentially bamboozle people who, in particular, are under-resourced and do not have teams of Ph.Ds.” Secondly, he identified an agent versus principal problem in investment banking, and especially in proprietary trading activities, which the Volcker Rule had yet to halt. “Are they still doing what their customers want?” asked **Greg Smith**. “Or are they using their customers as pawns to do what they want?” His own experience suggested the investment banks were able to blur the line between trading on their own account, market-making as permitted even by the Volcker Rule, and acting as agents on behalf of their clients. Worse, he added, investment banks were happy to trade one way for their own books, while telling clients to trade the opposite way. The third problem, said **Greg Smith**, was Too Big to Fail, which raised the barriers to entry. “How can you compete in a market where the Too Big to Fail banks can essentially borrow money for free?” he asked. “How can you compete? How can you offer customers equivalent services?” The fourth and final problem listed by **Greg Smith** was regulatory capture. “To me, this is the most infuriating one,” he said. “The Senate Banking Committee is funded by the very people who it is supposed to be keeping an eye on. The current newly appointed head of the Securities and Exchange Commission (SEC) spent decades defending banks before she was appointed to the SEC. Prior to that, she worked in public service. The Goldman Sachs press secretary was formerly Bill Clinton’s press secretary. The revolving door between Washington and Wall Street spins very fast and very frequently.” Wall Street money, argued **Greg Smith**, had now captured the American electoral cycle, making it impossible for any administration to reform the banking industry in the same way as the Roosevelt administration managed in the 1930s.

Paul Woolley ascribed most of the problems in finance to intellectual error: applying a “special and limiting case” of the efficient market hypothesis as the foundation of action in finance. “In no other science - in none of the natural sciences - do we just rely on the special limiting case of, for instance, a vacuum, or zero gravity, or zero friction,” he said. “You would never get anywhere if you tried to build machines on the basis of zero friction, and so on. In finance we know that markets are not efficient, both instinctively and in practice. Yet the instruction manual that we all follow is predicated on the efficiency of markets. It is predicated on competition ensuring market prices reflect fair value, that markets are self-stabilising, and that competition eliminates excess profits.

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The efficient market hypothesis has been extraordinarily damaging, and its recent modifications cannot address many of the issues. It cannot explain short-termism, or why high risk stocks have a low return, or momentum or reversal, all of which are foundational problems in finance.” **Paul Woolley** recalled his own experience as a fund manager during the technology, media and telecommunications boom of the late 1990s, when investors withdrew from the firm as its performance faltered because it refused to buy over-valued technology stocks, and then flooded back after the TMT bubble burst and its strategy of investing on fundamental valuation criteria caused it to outperform the market. Momentum investing of this kind, he thought, refuted the efficient market hypothesis. He also thought the emerging discipline of behavioural finance was no more useful as a practical guide to action. In his view, the agent-principal problem was the best explanation of the misbehaviour of asset prices in financial markets, and that modelling it had provided an explanation of how momentum took hold in financial markets. “By agents I mean the brokers, the fund managers, the investment banks,” he said. “The principals are the owners of the assets, the pension funds. They call themselves the asset owners but they are not, really. They are proxies. The whole of finance is riddled with principal-agent problems.” **Paul Woolley** agreed that agents extracted rents, but argued the larger problem was the distortion of asset prices introduced by the delegation of investment management to fund managers, and the asymmetries of information between asset owners and fund managers and brokers. “The agent has more information,” he said. **Paul Woolley** concluded that principal-agent issues are so ingrained in the financial system that a “social planner” such as the International Monetary Fund (IMF) needed to intervene, by publishing a code of best practice for long-term investing. He thought a code was a more effective solution than any amount of regulation, and was pleased that the Group of Thirty (G30) had recommended exactly this. “You need to have a sensible herd to replace the stupid herd that we find ourselves landed with because of a false understanding of finance,” said **Paul Woolley**.

Thomas Mayer focused on a structural fault in European banking. He said that fractional reserve banking created a constant stream of liquidity problems for banks, which developed occasionally into solvency problems which could become systemic, and that these in turn necessitated central banks to act as lenders of last resort and government budgets as financial backstops for deposit insurance. As a result, the balance sheets of the central banks had inflated greatly during the financial crisis and public debt had soared. **Thomas Mayer** thought that neither of the radical solutions to this problem – the so-called “Austrian” solution of 100 per cent reserving and the Hayekian solution of denationalising money and permitting competing currencies - would occur in pure form within his working lifetime. “The moment that you build deposits without keeping the asset on the other side to cover the deposit, you are engaging in fractional reserve banking, whether this is gold, whether this is Bitcoin, or whether this is anything else,” he said. **Thomas Mayer** did not think insurance of deposits by a single state was an option, at least in the euro area, because there was no single state and nobody in Europe wanted one either. Nor was unlimited quantitative easing a solution in Europe, argued **Thomas Mayer**, because the European Central Bank (ECB) was not beholden to a particular national government in the same way as the Federal Reserve or the Bank of England or the Bank of Japan. As a result, government bonds in the euro area were not really risk free. Therefore, he advocated a policy of replacing government bonds as the risk-free assets underpinning the European financial system (on grounds governments cannot require the ECB to “print money” to honour them) with deposits that are fully backed by banks’ holdings of central bank reserves. “What is a safe deposit?” asked **Thomas Mayer**. “What is a safe asset? A safe asset is an asset that you can exchange at any

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time under any circumstance for central bank money, which is legal tender. So this is obviously cash - and deposits backed by central bank reserves.” His proposal amounted, he argued, to a 100 per cent reserve requirement for a proportion of deposits (and not for all, as the Austrians have suggested) held by banks. To accord deposits this status, banks could borrow reserves from the central bank and deposit them with the central bank, the cost being determined by the difference between the price at which money is lent by the central bank and the interest paid by the central bank. **Thomas Mayer** added that the central bank could use the price of reserves as part of its management of the ability of banks to create safe deposits, making reserves cheaper in a boom (by narrowing the central bank’s lending and deposits rates) and more expensive in a bust (by widening these rates). This, he thought, would reduce the amplitude of the credit cycle. During the upswing more people would hold safe deposits as alternative costs declined. This would reduce the credit and money multiplier. The opposite would happen in a downswing. “Banks, of course, would give up part of the seigniorage out of the money creation that they normally have,” explained **Thomas Mayer**. “If I am able to issue deposits against credit, and claim that these deposits can at any time be converted into central bank money, I can offer the customer a risk-free rate and do not have to pay him a risk premium. The bank gets seigniorage by pretending that it performs a safekeeping function as part of the banking business, but deposits created by extending credit are not really safe. To be safe, deposits would need to be backed by central bank reserves instead of being created through credit extension. Safe deposits, while being as safe as cash, allow you to make non-cash transactions. Therefore, they cannot be substituted by cash holdings. An investment deposit, on the other hand, is a credit that you as an investor give to the bank, which the bank then intermediates.” Measured against these central bank-backed safe deposits, he continued, all other bank liabilities would be risky, with loss absorption in case of bank failure according to a hierarchy ranging from equity to investor deposits, via subordinated and senior debt. He thought this would make lenders more cautious about lending to banks rather than keeping money at banks via central bank-backed deposits, forcing banks to pay the true costs of equity and debt instead of the costs subsidised through the existence of public bail-out funds, further reducing the amplitude of the credit cycle. With government debt no longer a risk-free asset, continued **Thomas Mayer**, banks would also need to reduce their holdings of it and increase their holdings of deposits backed by central bank reserves. He suggested the ECB buy all government debt posted to the central banks as collateral for credit to supply banks initially with the needed reserves for the creation of safe deposits, and place it in a special account, from which it could be wound down over time as governments re-paid their debts. **Thomas Mayer** thought any defaults of government debt held by the ECB could be covered by earnings of the ECB from seigniorage. This reduction in the status of government debt would have the further benefit of forcing governments to fund their debts in the capital markets rather than from the banking system.

George Selgin said he had no idea what the ideal financial system should look like, and he did not think anyone else had either. “An optimal financial system cannot be designed by anyone,” he said. “It has to be discovered. And it must evolve. And it must keep on evolving as conditions change. And this process and evolution can only be the result of entrepreneurial innovation.” To ensure that this entrepreneurial innovation led to good outcomes rather than bad ones, **George Selgin** thought the environment in which entrepreneurs operated needed five main characteristics to create a stable and successful financial system. The first is sound money (“One thing that has not been mentioned here is the tremendous part that unsound monetary policy plays in creating financial

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crises, both booms and busts"); the second little or no regulation ("Regulations get captured by the very special interests which they are supposed to contain and control and shaped in ways that have bad consequences for consumers in particular"); the third openness to competition ("Contestability, if you like"); the fourth, subjection to the rule of law ("Contracts have to be honoured as written and enforced, and there should be consequences for those who dishonour them"); and the fifth an environment in which investors and depositors are responsible for the choices they make ("Bank customers in particular need to make informed choices about what assets or what banks to deal with") because regulation does not relieve them of the burden of doing the research. "I have no more idea of what is in an iPad than I do of what is in my bank's portfolio," he said. "The difference is that all of us do some research before buying an iPad, and spend no time at all investigating whether our banks are sound or not. This is a result of the incentives that regulations have created that make it unnecessary for banks to even bother trying to tell us anything about what they have and do not have on their balance sheets." In making these suggestions, said **George Selgin**, he was appealing not to ideology or financial theories such as the efficient markets hypothesis, but to history. "Financial systems, history shows, have existed in the past that were both remarkably efficient and remarkably stable," he explained. "They were systems in which the conditions I have outlined have all prevailed. Some examples include the famous Scottish banking and currency system, until Parliament extended bad English regulations to it in the mid-19th century, and the Canadian system until after the Great Depression. These were, by the way, fractional reserve systems, and quite stable. It is simply not true that fractional reserve banking is inherently unstable or unsafe. It has become so because of the way it has been mucked up. Fractional reserve banks had a remarkable record of safety in the systems I have mentioned. Of course there were bank failures, and sometimes losses were suffered, but nothing dramatic. These countries avoided crises that afflicted their southern neighbours routinely, where more regulations had corrupted the financial structures of those countries." **George Selgin** added that more recent examples of free but stable banking systems were unobtainable because of wholesale government interference in financial markets. "The citizens of the nations I refer to were proud of their financial arrangements," he said. "Who is proud of their financial arrangements today?" He closed by arguing that it was "trivial" and a "truism" to argue that more and better regulation could have prevented the financial crisis, but only by eliminating risk in the financial system. Besides, added **George Selgin**, any regulatory initiative was soon captured and distorted by special interest groups. Too Big to Fail, he explained, was a case in point. "Central banks are not having to guarantee deposits at very large banks because they have gotten large," said **George Selgin**. "They have gotten as large as they have gotten because they know that the central banks will guarantee their deposits. It is very clear from the evidence in the United States at least that every time there is a big bank bail-out - it started really with Continental Illinois – the tendency is for other financial firms to scramble and try to make sure that they are at least as big as Continental Illinois. That is why Lehman Brothers took no steps to try to reduce its risk exposure once Bear Stearns was bailed out. In fact, it shot the moon because it thought, 'Oh, we are bigger than Bear Stearns, so we are safe'. The excessive size of some financial firms is one example of how the structure of the financial system has been artificially shaped by government interference in a very unhealthy way. I do not think you would see the same kinds of economies at work in a system where those incentives are absent. No experts or politicians or social planners, or whatever we call them, can be expected to design and put in place a sound financial system. We must, if we are to hope to get rid of financial meltdowns in the future, allow such systems to develop spontaneously."



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A demonstration of a new method of matching investors and hedge fund managers by Sam Hocking of iMATCHATIVE, and a demonstration of a new form of unsecured consumer lending by Pärtel Tomberg, CEO of isePankur, followed by a panel discussion between Udayan Goyal of Anthemis Group, Samad Masood of the FinTech Innovation Lab, Kosta Peric Deputy Director for Financial Services for the Poor at the Bill & Melinda Gates Foundation (previously co-founder of Innotribe at SWIFT), and Emma Vartolomei of All Street, moderated by Dr. Chris Sier of the Financial Services Knowledge Transfer Network.



Sam Hocking



Pärtel Tomberg



Udayan Goyal



Dr. Chris Sier



Samad Masood



Kosta Peric



Emma Vartolomei

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Sam Hocking explained that he was a former Wall Street banker who had entered the technology business to try and solve a problem he had dealt with for a long time while he was working in the prime brokerage industry from the 1990s to 2012. “The company is called iMATCHATIVE, and the platform that we have created is called altX,” he explained. “We are trying to solve two problems: search and matching between buyers and sellers, the buyers being institutional buyers of hedge funds, and hedge funds being sellers trying to access capital in a much more efficient way and providing better insights to allow both sides to make better, quicker decisions.” Dividing his working life principally between San Francisco (where he lived) and New York (where he was based) exposed **Sam Hocking** to the appetite for innovation and confidence in technology of Silicon Valley. “In San Francisco, it is all about innovations, all about technology, it is all about how can you make things more efficient and bring people more together,” he said. “On Wall Street, it is much more around financial services, old line technology, not big disruptions. So I got the idea of disruption from living in San Francisco, and the opportunity to disrupt a space I knew from Wall Street.” **Sam Hocking** explained that the immediate inspiration for what became altX was the financial crisis of 2008, when institutional capital bypassed small and medium-sized hedge funds as it fled to the safety of larger managers. “One of my problems is that 5 per cent of the hedge funds in the world own 80 per cent of the capital,” he noted. “I do not think that is a good outcome for anybody. We want to open up the market and find capital for people that are smaller and more innovative.” Over his time in prime brokerage, **Sam Hocking** had also noticed that an investor looking to invest in a hedge fund might have 900 meetings a year to make as few as four or five investments, while the hedge fund managers on the other side might have as many as 100-150 meetings and end up with one investor or none at all. “This is a big asymmetry of information issue, and a source of inefficiency in the market,” he added. “It is way too expensive, and there is limited transparency.” Solving the inefficiency and opacity required solving a search problem, a data problem, and a matching problem, explained **Sam Hocking**. altX tackled them by making use of big data processing; the matching algorithms pioneered by Nobel Prize-winning economist Al Roth; psychometrics, which are necessary to understand the preferences, attributes, and decision-making processes of both investors and hedge fund managers; superior analytics, and a multi-disciplinary team drawn mainly from outside the industry, which includes physicists, mathematicians, engineers, behavioural scientists and technologists as well as capital markets people. “Everything is really about matching,” he added. “What school you go to is a match, your spouse is a match, where your children go to school is a match. In America today almost 30 per cent of online matches lead to marriages, and that number is probably going up. We believe that the future of finance will go the same way, and that matching investors and their investments will happen in a much more digital way too. If you have different understandings of the market, we can model and quantify your decision-making process in a way that would match up on the other side. We have got the psychologists, the physics, the algorithms and the performance data to make those matches.” **Sam Hocking** acknowledged that transforming the investment management industry through disruptive technology would take time, but thought smaller start-ups like his own had a better record in disruptive technology than large corporations. “I am a person that ran big technology budgets that were \$100-200 million, and we did no disruption, no disruption at all,” he said. “I think we had a very poor approach to the way we did it. It is small companies that can really drive a lot of science and technology to market. Our goal is to map the hedge fund space, create a decision engine, and then change and automate the way the capital distribution process is working. The benefits of this include transparency, democratisation, enhanced insights and increased discovery of funds that are not being seen by investors. We are not trying to disintermediate the whole process. There is still going to be a human judgment - the science and technology is going to augment human judgment – but the financial services industry needs that. It needs a new way to think

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about things. As Einstein said, if you always do what you always did, you will always get what you always got.” **Pärtel Tomberg** described isePankur, a platform for lending money to Estonian consumers, which the company now wished to extend to Finland, the Netherlands and Spain, making use of Estonian membership of the European Union (EU) to sell its services throughout the European single market as well as a single technology platform. He explained that loans made across borders within the EU are legally enforceable contracts. “Everyone who talks against that in this space is simply protecting their own back,” said **Pärtel Tomberg**. “We deliver the service, through the use of proprietary technology, underwriting models and processes, at a fraction of the technology budgets that banks or more traditional financial institutions have. We look at Europe not only as a group of countries, but as a market similar to the United States, where there is a number of states with certain cultural differences, but we can still service the entire market space.”

Pärtel Tomberg said the company aimed its services at consumers that make use of payday lenders (such as Wonga) or credit card borrowing, and look to restructure their debts in ways that better suit their incomes. “We effectively act as an IMF for consumers,” he said. “We do personal financial management. We go through their finances. We try to figure out a package that will pay off all their debt, and get them back on the straight and narrow.” The loans are for up to five years and up to €10,000, and completely unsecured, said **Pärtel Tomberg**. The funding is sourced not from company capital or corporate borrowings but from third parties. A good re-payment track record is essential because the company relies not on interest income but sales commissions, which are geared to re-payment rather than issue. “Two thirds of our revenues are generated from the money being paid back,” explained **Pärtel Tomberg**. “We need to manage fraud, and we need to credit score, and we need to manage the risk. If the scoring and risk management fails, we need to recover and collect the funds. At the same time, on the other side, we also need to attract investors who will then put the money into the consumer loans that we are originating.” Because isePankur is delivering a banking-style service, he added, the company is subject to the same rules on anti-money laundering (AML) and know your customers (KYC) as mainstream banks. **Pärtel Tomberg** also said that the company was currently delivering returns to investors of 18 per cent after taking bad loans into account. He attributed the success to an excellent technology platform, an effective process for recruiting investors and vetting borrowers, and cheaper and more varied sources of capital to lend, giving isePankur competitive advantages over traditional banks. “As we do not have a single rated or unrated cost of capital, we do not need to have a single credit policy,” explained **Pärtel Tomberg**. “There is no threshold which tells us that, if the non-performing loans are over five per cent, we are going to lose money, because we can combine investors who have different risk return profiles, different maturity expectations, and different rates of interest and inflation. With no need for a single credit policy, we can serve a really wide spectrum of borrowers, from the Triple A to junk bonds. If an investor wants to make a loan with a four per cent net return, and no overdue loans, they can have it.” He added that the technology also made it profitable to tackle niche markets. “With a single platform we can enter markets much more quickly and much more efficiently than most other companies can do in the similar space, which simply means that even niche markets such as Slovenia, Slovakia or Cornwall can be profitable for us,” said **Pärtel Tomberg**. “If you put the figures together we need only 20 borrowers per working day in order to get the annual portfolio up to €50 million. So, we can target niches that are not interesting to most other banks. We also serve diasporas in different countries. Polish people working in the United Kingdom, for example, are probably treated by the local banks as immigrants who just arrived here and who will probably disappear. At the same time, Polish banks treat them as immigrants who have left the country. So in both the new home country and the previous home

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country they are treated as no one, effectively getting no credit grade. By building up credit histories and policies in both countries, we can do double-checks on the customers and do cross-border collection and recovery.”

Kosta Peric argued that innovation is necessary, and that critics of financial innovation should not confuse ethical failings with harmful innovation. He defined innovation as a “process” by which ideas are turned into something of value, and explained why large corporations are not good at it. “The problem with innovation is that it brings uncertainty,” explained **Kosta Peric**. “Uncertainty is something difficult in the well-oiled, big machines that our corporations are. If you start innovating, and putting grains of sand in the well-oiled machine, it is not perceived well.” Depicting large corporations as akin to medieval castles, with thick walls built to protect the people on the inside and which naturally focus on risk and cost reduction rather than innovation, he advised companies to build “sand boxes” outside the castle walls. “A sandbox outside of the castle is where you can deal with uncertainty, or you can experiment with things, so that you can try them out in a protected environment where the brand is preserved, the reputation is preserved, the investment is limited,” said **Kosta Peric**. “You push the ideas to the degree where you can gauge how appealing they are. Many ideas will be tried and dropped. Some of them will actually bring some value, and then you can bring them back to the castle in a non-threatening way.” The ingredients of a successful “sand box,” he continued, are openness to ideas from any quarter and anyone (“open the gates for entrepreneurs to come and put ideas forward”) and a willingness to act on the ideas (“an incubator with some funds”). A successful initiative at SWIFT Innotribe, said **Kosta Peric**, was “start-up challenges,” in which entrepreneurs showed bankers what they offered. In 2013, the start-up challenge attracted just under 200 applications from small start-ups around the world.

Samad Masood pointed out that the financial services industry spends more on technology than any other sector save defence and government, but smaller technology companies find it difficult to sell to large banks. “There are various reasons for this,” he said. “Partly, it is very risky to buy off a small company which might only have a year or two of accounts. Also, the small companies do not have the runway, or the finance, to cover the cost of a sale to a large corporate, which can take 18 months to two years. They just do not have that luxury.” To help them, FinTech Lab has programmes in London and New York that enable start-ups to display their products and services to the CIOs and CTOs of 12 large banks in London and 13 in New York. “12 CIOs sitting in a room together get to act like dragons from Dragons Den,” explained **Samad Masood**. “The companies come in, and do a ten minute pitch, followed by a ten minute Q&A. I then wheel them out, and the banks get to talk about them together. The benefit for the banks is that they get to validate with each other what these technology companies could be providing to them, and what the opportunity could be. It is a lot easier for a bank to start exploring or investing in a very small start-up if they know that two or three other banks are also interested.” The companies that get chosen for further investigation become part of a three month programme in which they work closely with a bank. “During the programme each bank appoints what we call a chaperone, and they work very closely,” said **Samad Masood**. “We call them chaperones rather than mentors, because the idea is that you are in a trusted environment for three months. You are not trying to sell to the bank. What you are trying to do is develop your proposition, and understand who you need to meet with in the bank, who you need to talk to, what kind of technology challenges you might face, and what kind of security requirements you might need to meet. The chaperone is working to open doors for you, and work with you to understand who you need to meet with in the bank. After three months our start-ups have probably been in 70 to 100 meetings. They get pretty exhausted by the end of it, and no one is expecting in that period that they are going to sell anything. But

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there has been, at the very least, a cultural exchange and a learning experience. A lot of the start-ups that come to us have never sold to a corporate, or worked for a corporate, let alone a bank. It is a learning experience to understand how many people you have to know, how many people have to give a nod, and how many people you have to get to give a nod again, and then again, before anything happens. There is also a learning experience for the banks to understand what these new technologies are and how they can work. This gives them the opportunity and the confidence to make decisions around things that could be new and innovative, and try and sell that back to their organisations. There is not a remit at the top of these organisations saying, 'No innovation, please.' Anyone who works for large businesses knows that there is a process of buying - a very complicated process of buying - and that you need to get through a massive internal network to make a sale. That is why it is very difficult for large organisations to innovate." He admitted that the programme meant start-ups had to give up three months of their time, and that the model did not work as well for technologies that banks see as competitive differentiators. "It is not necessarily bad that we focus on non-differentiating technologies," said **Samad Masood**. "How many times do we hear about regulation? That is a totally non-differentiating thing, yet every single bank has to comply. There is a big opportunity to innovate around how, collectively, the banks can do regulatory compliance." He added that banks need much less persuasion than they did before the financial crisis to adopt technologies that can help them cut costs. "These banks increasingly are realising that there are large swathes of their IT estate which are not differentiating," he said. "The incentive to get involved in a programme like the FinTech Lab is much higher now for banks. Whereas a lot of banks would previously have thought about developing technologies themselves, and created layers and layers of complex legacy technology, the pressure now is different. The mood has changed. They are a lot more focused on trying to cut costs, and trying to cut costs quickly, and trying to find new ways of doing things which do not cost money." **Samad Masood** added that Accenture, as host of the FinTech Lab programme, get two benefits. First, Accenture is seen to be providing an innovation platform for the banks, all of which are clients. Secondly, the company is seen to be investing in the technology industries in London and New York. "As a technology services company we benefit, as there are more people and more skills, and more companies working in new technologies, and engaging with corporates," said **Samad Masood**.

Udayan Goyal quoted the title and words of a song by the American poet and musician Gil Scott Heron: "The revolution will not be televised ... The revolution will not be brought to you by Xerox in four parts without commercial interruptions." The words capture, he said, an invisible revolution led by entrepreneurs and ignored by banks. "The people right at the top are ignoring what is going on at the bottom," said **Udayan Goyal**. "But we have seen a Cambrian explosion of companies that are entirely reinventing financial services despite every challenge and every roadblock that has been thrown at them by unfair regulation and unfair competition. Despite everything that the large banks have done - and in fact the large companies have done a great deal to create roadblocks - they are thriving. That is exciting. There is a light at the end of that tunnel. However, we are not out of the woods yet." One reason for that, he added, was the revolving door between the large banks, the regulatory authorities and the political establishments. **Udayan Goyal** deplored the lobbying which had, for example, emasculated the Volcker Rule, and the idea of regulatory arbitrage as "akin to criminals moving to a land with no law." Citing the American lawyer, academic and former bank regulator William K. Black, who exposed Congressional corruption during the Savings and Loan scandal in the United States, **Udayan Goyal** described senior bankers as "sociopaths with Svengali tendencies." He added that a senior banker had described the recruitment technique of his bank as using "psychometric testing to recruit social psychopaths,

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because their characteristics suit them to senior roles in our institution.” These personalities meant that the idea of “collaborating for a greater good, being altruistic, is not in their philosophy; it is not in their DNA.” These twin environments make it impossible for small competitors to the large banks to become larger competitors, said **Udayan Goyal**. “We have a cultural issue we need to address,” he said. “It needs to be top-down, it needs to be bottom-up, and right across. And that itself will create the right ethical framework for companies to actually start to work alongside each other. We also need a level playing field. We need a playing field that allows the small company to try to be big. There is a tendency for financial institutions to consolidate, as a result of the whole Too Big to Fail philosophy, creating massive barriers to entry to any small institution. We live in this particular industry, where you have got all these great ideas coming, but all these barriers are thrown up by people. The reason that we have suddenly seen a sea-change here is, of course, that we have lost trust in traditional institutions. That has created an opportunity. Entrepreneurs have finally realised that selling pet food on the web is less exciting than building a new bank, or building a new peer-to-peer lending platform. So they are starting to get excited about the opportunity, because actually the two most lucrative verticals in the world are health care and financial services. Health care has had a lot of bottom-up innovation, and start-ups coming in, but financial services frankly has not, because we have had all these artificial barriers.” **Udayan Goyal** pointed to the example of Kodak as a large company which invented digital photography and owned the patents to it, but did nothing with them. As a result, companies such as Instagram reaped the rewards of the technology. “When I say the revolution will not be televised, all those guys sitting up on the 59th floor or the 65th floor will suddenly find one day that their business has disappeared, just like Kodak found its business disappeared, because somebody else has innovated in the value chain,” he said. Why technology is disruptive, he added, is that it lowers the cost of customer acquisition, and lower acquisition costs make it possible to service customers with smaller amounts of money in their bank accounts. **Udayan Goyal** said some of the start-ups he was familiar with had lowered the cost of acquiring customers to US\$25 a head. “If you can acquire a customer below US\$25, the return on investment for that customer can come back very, very quickly, and you do not need to charge a customer a whole bunch of fees,” he said.

Emma Vartolomei argued that a new financial system could not come into being until individuals took personal responsibility for their finances. “I was shocked when I read a research report that showed 65 per cent of the current population of the United Kingdom prefers to have their pension managed by someone else,” she said. “We do not want to take responsibility for our finances, and this is part of the major financial crisis that we are currently still trying to solve.” The purpose of her not-for-profit organisation and open source platform called All Street (“It stands for finance for all”) was to raise the level of knowledge of consumers, merchants and lawmakers about new forms of finance outside mainstream banking, in order to “help our society to move from a centralised financial system to a decentralised financial system.” The overall vision of an alternative financial system, explained **Emma Vartolomei**, is one driven by peer-to-peer interactions, initially with crowd funding and later with alternative currencies. “Crowd funding right now addresses the lending and the investing,” she said. “The alternative currency addresses the way money is circulated in the economy. If we manage to engage people to think about their personal responsibility when they are managing their money, we can address core functions of the current system in these ways. That is why we say it is our own responsibility to choose where we are putting our money, how we are investing our money, what is going to happen with our pension funds, and how we want to be part of this financial system. We are talking about an alternative financial system that is there already. All the major functions of the existing traditional financial system are being substituted right

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now by different innovation efforts.” **Emma Vartolomei** added that it is inherently difficult for innovation of this kind to emerge from within the existing banks. “People inside a certain system will not come up with destructive innovation,” she said. “Take a product manager sitting in Citibank. Do you think that they will go to the management at Citi and say, ‘Okay, we need to give up our brick-and-mortar business model and move towards web-based peer-to-peer banking’? They cannot. They cannot go to that level. That is why innovation within the current financial structure is difficult to do. You need a different operational framework set up inside the big organisation to help you allow this kind of thinking to happen.”





Access to finance

A panel discussion between Nici Audhlam-Gardiner of the Royal Bank of Scotland, Phil Cox of Silicon Valley Bank, and Professor Mark Hart, Deputy Director of the Enterprise Research Centre at Aston University Business School, moderated by Nigel Walker, Head of Access to Finance at the Technology Strategy Board.



Nici Audhlam-Gardiner



Phil Cox



Professor Mark Hart



Nigel Walker

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Nigel Walker quoted figures from a report by Lord Young, adviser to the Prime Minister on enterprise and small and medium-sized enterprises (SME) in particular. “Micro-businesses, i.e., those with between zero and nine employees, make up 95 per cent of firms in the United Kingdom,” he said. “There are about four and a half million of those and they generate about 20 per cent of the aggregate turnover of businesses in the United Kingdom. Small firms of between ten and 49 employees represent about four per cent of the number of firms and generate about 15 per cent of turnover. Medium-sized firms of between 50 and 249 employees are only about 0.6 per cent of firms but they come up with 14 per cent of turnover. Large firms, those with more than 250 employees, represent about 0.1 per cent of the number of firms and generate about 51 per cent of turnover. That seems plausible, does it not? A few very large firms with lots and lots of turnover, lots and lots of jobs, and then a very large number of very small firms that, when put together, contribute a lot to turnover.” **Nigel Walker** added that the 4.6 million firms with up to nine employees were of greatest interest to the Technology Strategy Board, which provides grants to innovative businesses as well as connecting them to other businesses that can accelerate the journey from concept to commercialisation. “The overriding question is how do you finance that growth?” he said. “How do those firms get access to finance? Is there insufficient supply of capital, particularly debt finance? Or is there insufficient demand for capital? On the one hand, one hears businesses saying, ‘I cannot get a loan from my bank - absolutely no point in even talking to the bankers.’ On the other hand, there are reports that people are hoarding capital; that people are not going to the banks to borrow money; and that they are storing up cash on their balance sheets and not investing.”

Mark Hart explained that as deputy director of the Enterprise Research Centre – which is funded by a combination of the Economic and Social Research Council, the Technology Strategy Board, the Department for Business, Innovation and Skills and the British Bankers Association - he leads the Midlands component of the United Kingdom Goldman Sachs 10,000 Small Businesses programme, which aims to help SMEs access capital and other forms of support to achieve their growth plans. This meant he was delivering finance as well as conducting research and examining data, adding that a minority of SMEs were responsible for most of the growth experienced by the sector. “There are about 10,000 of these High-Growth Firms (HGFs) in the United Kingdom economy in the private sector who generate a large number of jobs,” explained **Mark Hart**. “We know they are not concentrated in any particular sector. We know they are more likely to be over five years of age. We know they are likely to be employing less than 50 people. So we are getting a bit of a profile of what those businesses are. We also know, and we need to find out a little bit more about this, the type of management teams running those businesses. That is the job of the Enterprise Research Centre, whose brief is simple: it is to understand the drivers of growth. We clearly have a problem in terms of the current economic climate and understanding what are the drivers of growth in the private sector. So, we set out an agenda.” That agenda includes access to finance; innovation; internationalisation; productivity; and the individual entrepreneur. “I do not think you can understand the arguments about the demand for finance unless you really understand the mindset of the entrepreneurs and what they are seeking to do with their businesses,” he said. “So we have a whole program of research on ambitious entrepreneurs, leadership, their competencies and managerial skills.” He pointed out that the data on the appetite for and availability of finance for SMEs - based on the quarterly SME Finance Monitor - was volatile and difficult to interpret, and apparently disconnected from the growth of the sector. **Mark Hart** said banks appreciate the survey for helping them understand perceptions of their products and services, but the linkages between bank finance and growth in terms of productivity and innovation were hard to discern. “We need to sort of put that survey in context,” he said. “It should not be seen as the definitive voice about the supply and

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the demand for bank finance.” **Mark Hart** said the 2011-12 financial year data from the Office for National Statistics (ONS) found that business start-ups employing at least one person were back to 2009 levels, providing 690,000 jobs. In tandem with the 1.6 million jobs created by existing SMEs, he said, that meant the sector created 2 million jobs in 2011-12. “We have been having the funding gap conversation for the whole of my academic career, which stretches back almost four decades,” said **Mark Hart**. “That has not changed. Yet, in the midst of all this discussion, we have businesses that are actually out there creating jobs and putting things together with the banking sector or with the private equity sector or with their own resources. They are just getting on with it. That is something that changed in the data in 2011-12. It was not there in 2009-10 and 2008-09. We need to delve a little bit more into that. Does the perception of ‘I cannot get a loan’ matter, or is that just a media-inspired debate? Is it just background fluff?” His own answer is that established SMEs are able to articulate their need for external finance much more succinctly once they have developed a plan for growth, and that well-articulated needs experience fewer problems in attracting bank, private equity, business angel and crowd-funded finance.

Nici Audhlam-Gardiner pointed out that some SMEs have no need of access to bank finance, and that it was a mistake to see a decline in bank lending to SMEs as incontrovertible evidence of a diminution in supply rather than lack of, or shrinkage in, demand. She noted that her own customers were making less use of overdraft facilities in the previous 12 months. “Access to finance is not the be-all and end-all in growth terms,” she said. “There are other things that banks need to be doing in terms of helping customers to be successful.” By this, **Nici Audhlam-Gardiner** meant business planning support, start-up hotlines, enterprise guarantee schemes, and access to alternative sources of finance such as private equity and angel finance through the private banking arm of the bank. “There is a load of other reasons why firms do not grow, and some of them are a little bit more fundamental than finance,” she added. “That is where some of the things which all of the banks do come into play. Mentoring becomes really important, as does putting people in contact with larger firms or people with gray hairs who have been through the experience. For example, we just launched a new SME community called BizzCrowd that helps customers to find other customers on a B2B basis.” However, **Nici Audhlam-Gardiner** did recognise that a lack of appetite for bank finance can also reflect a lack of confidence in the prospects for growth, though she thought this reflected the negative climate created by politicians and the media rather than reality. “Most of the discouragement is actually a passive discouragement,” she said. “It is what people have picked up through conversations that they have had rather than because the banks told them to go away.” She added that Royal Bank of Scotland lent 36 pence in every pound it had on deposit, against a market share of current accounts of only 24 pence in every pound. “We are overweight in terms of the amount of lending that we do, and we have worked hard to see how we can maintain and improve that,” said **Nici Audhlam-Gardiner**. “We have improved our acceptance rates on business. It is up to 93 per cent now – and that is a combination of new and re-finance.” She pointed out that, as a debt rather than an equity finance provider, the bank reckoned it could afford to take a risk that failed to pay off in only one loan in ten. “Dragon’s Den is the bane of our lives because people come trotting down and they are expecting us to have all kinds of money on the table and take big bets,” said **Nici Audhlam-Gardiner**. “For our shareholders and also for our customers’ sake we need to make sure that we are lending in the right places. That does mean that, for a customer who has very little track record, it is typically more difficult for them to come in and make the business case.”

Phil Cox explained that the Silicon Valley Bank focuses on a single sector: technology, including life sciences and environmental technology. “If a business is not in one of those particular areas then we do not get involved,”

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he said. "That gives us a long run dedication to that segment and those types of businesses around the world and therefore, over time, you build up an expertise in terms of how to look at those businesses, how to help them and lend money to them, and how to build relationships with the dedicated investors in those types of businesses." The bank, said **Phil Cox**, was now looking to reproduce the success of its American model in the United Kingdom, and was experiencing strong demand because of the type of bank it was rather than because potential customers were being turned down by mainstream banks. "The United Kingdom is an interesting place in terms of what we describe as the eco-system for innovation," he explained. "In terms of company formation, especially out of the universities, we give a big A-plus to the United Kingdom. However, the United Kingdom would scrape a C on funding overall because there is nowhere near the level of seed and angel and venture capital money here as there is in California, let alone the United States as a whole. So part of our activities is to help businesses as they grow and develop to find the right sources of finance. That may be us in terms of loans; it may not. It may be the investor base, and those investors may or may not be in the United Kingdom. It may be getting them access through our networks to potential investors, or business partners, in the innovation economies of the world from California to Tel Aviv to Mumbai to Shanghai. That is the eco-system, if you like, in which we live." **Phil Cox** said Silicon Valley Bank had lent just over £5000 million of new money, mostly to businesses with less than 50 employees. "Those businesses have unique needs," he said. "They grow very fast. They often have a window of opportunity for the technology to be deployed and commercialised. Therefore, access to a balance of equity and debt financing is key at the right time. They are also going international much earlier in their evolution than mainstream businesses, so they need working capital finance and have receivables to finance from customers [who] are on the other side of the world." He added that one of the biggest challenges facing the bank in the United Kingdom was finding staff that could understand and work with the clients, though being able to handpick staff afresh also gave Silicon Valley Bank an advantage over the established banks. "The people that you send out to talk to businesses and help businesses need to be businessmen and women themselves," said **Phil Cox**. "They need to throw off this 'You must sell three insurance policies this week' attitude. It is about building, at a personal level, a quality relationship and an understanding of what it is that is keeping the businessmen and women awake at night. What are their biggest challenges? How can we as an organisation help you? If along the way, you use some of our products and services, then fine. But many businesses that we help, and that we see along the way, never actually do any business with us. That is okay by us because our businesses around the world need a flourishing eco-system to thrive in and, if we have played our part in that, then we will be successful. Our business is all about quality of the people and the quality of the dialogue that we have with businesses, and how clear we are about what is important to those businesses, and how we might be able to help them." As a member of the board of Entrepreneur First, which enables technology graduates to pitch start-up ideas to investors, **Phil Cox** believed that British graduates were increasingly inclined to start their own business rather than join a large corporation.



Trust, reputation and law:

commitment and ethics in financial services

A presentation by Professor Alan Morrison of the Saïd Business School at the University of Oxford.



Alan Morrison spoke about the changing role of trust in financial markets, and in particular about a shift in investment banking from relationships to transactions. “J.P. Morgan knew most of his customers, and was very concerned to make promises that would be kept,” he said. “Now the world is much more transactional. Investment banking is a much more contractual and arm’s length business. Investment bankers can succeed without being a golfing buddy of their clients. The new financial firm is epitomised by Lehman Brothers, where one of the more significant investment bankers of our time presided over an enormous business which was largely transactional and very much based in dealing rooms. When we say that ethics have broken down, that seems to be shorthand for the observation that we have moved away from the relationship-based business of J.P. Morgan to the transactional business of Dick Fuld.” The interesting question, said Alan Morrison, is whether it is a mistake to identify the shift purely as an ethical failure. He suggested that changes to banking business practices can be traced to something else.

Taking the ABACUS 2007- AC1 CDO structure created by Goldman Sachs in conjunction with John Paulson at the expense of IKB bank as an exemplar, Alan Morrison argued that the shift to a more transactional form of investment banking did not necessarily mark a decline in the ethics of bankers and may even have advantages. “I am not sure that this deal is necessarily evidence that bankers are less moral than they used to be, but it is reasonable to ask whether they are, because press rhetoric surrounding this deal definitely suggested that it derived from a decline in behavioural standards,” explained Alan Morrison. “Perhaps we are actually seeing a change in the way that we do business, and maybe that change interacts with moral norms. Perhaps institutional changes cause ethical outcomes that we find less comfortable. But a sea-change in ways of doing business need not represent a moral collapse. I am not sure there is much evidence that bankers are inherently less moral than they used to be, although perhaps they face more temptation than they once did. If we want to argue about this sort of thing, we need something a bit more profound than a gag reflex to guide us.”

Lloyd Blankfein, the CEO of Goldman Sachs argued that the ABACUS 2007- AC1 CDO transaction should be viewed as very similar to other transactions in which clients buy an exposure in the cash or futures markets. Alan Morrison argued that this position was “not unreasonable.” In other words, argued Alan Morrison, Goldman Sachs need not have experienced an unmanageable conflict of interest when it helped John Paulson to obtain

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one exposure, and IKB to obtain its opposite. Nevertheless, he argued that “there is something about Abacus that is different. If you read histories of any major investment bank, you will see that they did business in a different way 50 years ago. Abacus represents a different style of investment banking and it seems to make many of us uncomfortable. So, how has investment banking changed?”

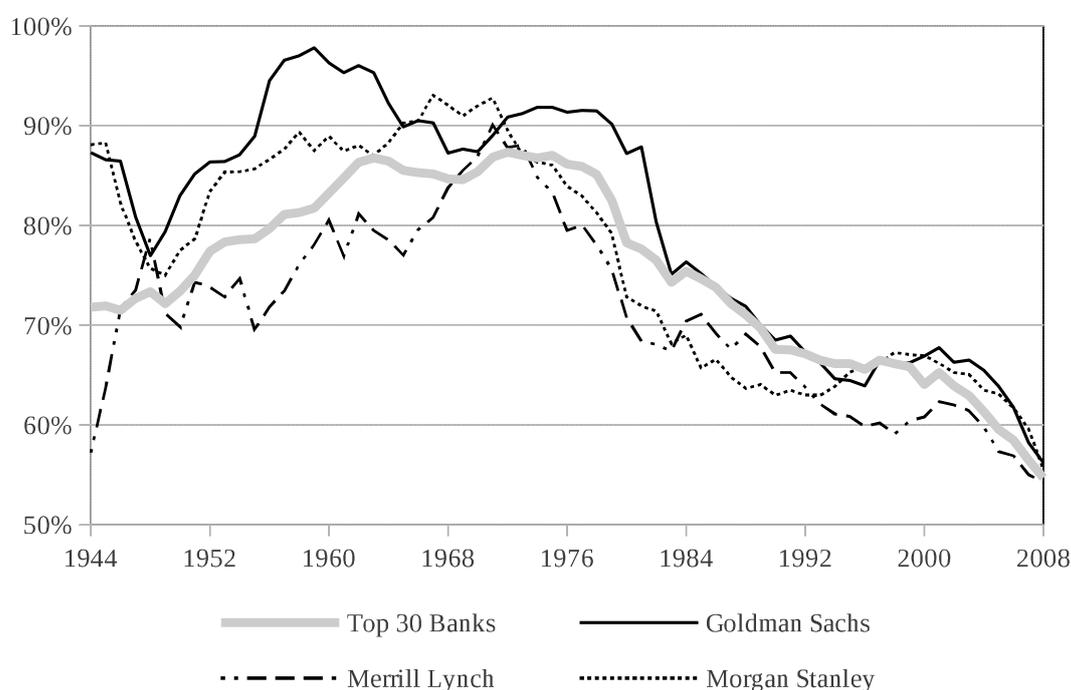


Figure 2. Investment bank relationship strength 1944-2008. (Chen, Morrison & Wilhelm, 2013)

Alan Morrison suggested that one significant change was in the depth of banker relationships with clients. He pointed out that, in the 1950s, senior investment bankers sat on the boards of many of their clients. The records of a 1952 court case reveal that Goldman Sachs was represented on 34 boards and Lehman Brothers on 54. By gathering data on every securities underwriting in the United States since 1933, Alan Morrison and two co-authors identify strong relationships between particular issuing companies and particular investment banks. Between 1933 and 1969, for example, they find that 61 per cent (by dollar value) of Morgan Stanley's clients had entirely exclusive relationships with the bank. There is a period in the data set, Alan Morrison added, where Goldman Sachs was underwriting almost 100 per cent of all the dollar value of the securities its clients issued (see Figure 2). Today, he said, that figure had fallen to 35-45 per cent. “Relationship strengths are dropping,” he said. “Is this because bankers have become too stupid to sit on the board? Or is it because their clients do not care so much about relationships? Is it because relationships matter less? By any measure, investment banks are doing more transactional stuff than they used to do, and their clients are moving around more. In every business

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we can find, except for M&A advisory work, client relationships appear to have weakened significantly over the course of the last 50 years, and most of that happened between 1975 and 2000. Are we seeing moral turpitude? Or are we seeing social progress? Or are we seeing a bit of both?"

The answer, argued Alan Morrison, is that technology and law has reduced the need for trust and reliance on a reputation for being trustworthy, and created greater scope for regulating relationships by contract. "Modern investment banks started out as trans-Atlantic traders of commodities, especially cotton," he explained. "They operated in an environment where commercial law was incredibly weak. Contract law was nothing like as developed as it is today. Across borders, it was virtually unenforceable and, at the same time, information flow was very slow. If I wanted to get a message to the United States, I wrote it down and put it on a sailing boat. It would take three weeks to get there and then the response would take three weeks to get back to me. I could not engage in real-time negotiation with counterparties. I had to trust them. And one thing the early investment bankers were good at was building reputation for being trustworthy and persuading people to do stuff when they had almost no legal protection. Trust was absolutely critical to this sort of market. What they really did was help people to make commitments, help them to make promises - all the stuff that we need to engage in social and commercial life, and they did that in a world where there was not actually much law." Once the transatlantic cable was laid, trading cotton was commoditised, and anyone could engage in it, he explained.

Similarly, the development of contract law reduced the need for trusting relationships, said Alan Morrison. Similar "technological shocks" occurred in the late 20th century, he continued, citing the invention of computers and financial developments such as the Black-Scholes options pricing model. "Suddenly investment bankers could write contracts that they previously could not write," explained Alan Morrison. "They could record data that previously was not even measurable. They could take the recordings to court and they could prosecute on them. So businesses that previously had been incredibly reliant on tacit communication, and upon their reputation and brand and all of those very important things, became less so. There are businesses that are still highly advisory and brand and reputation are important, but it is just a fact that 40 years ago technological advances and changes in law meant investment banking started to become much more contractual." Since the 19th century, he said, investment banking had evolved from networks based on trust and enforced by exclusion to contracts based on precise language and judicial punishment, which eroded the value of a reputation for being trustworthy.

Alan Morrison added that the rules imposed on markets by regulation only reinforce this effect. In his view, this transition from trust to contract is socially progressive. Studies of the links between the partners of the major American investment banks and directorships of major public corporations in the 1950s and 1960s portrayed a closed world in which business - and the associated information on which trades could be based, with corporate stock prices even rising when a senior banker was appointed to a board - was shared among impenetrable networks of individuals. Compared with that, thought Alan Morrison, a purely transactional approach based on price and contract rather than personal trust facilitates a much more open marketplace, in which anybody who can afford a lawyer can take part. "As soon as you move toward contracts, you allow strangers into your network and that may be a very socially progressive thing," he said. "You do not have to be a White Anglo-Saxon Protestant (WASP) anymore to participate in the capital markets. 19th and early 20th century

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investment bankers all knew each other. They were all related. They married each other. They stayed in closed communities. Important investment bankers were WASPs or German-Jewish people – nobody else got to play. Bankers formed were staggeringly close communities and they espoused a number of values that today would probably be interpreted as hate speech. Contract undermines that sort of behaviour. It is hard to see this as immoral. It may be a good thing. A more transactional market may open participation to all of us, so that we have more choices, and it is only by making choices that we can behave in a moral way. But, of course, more choice gives us new opportunities for immoral behaviour too. And that is where the public policy challenge arises.”

Alan Morrison added that this shift from trust to contract was comparable to the shift from status to contract by which the English historian Henry Maine characterised the transition from feudal to industrial society. Its drivers, he emphasised, were not declining ethical standards but a change in the technological and legal environment: sophisticated contract law, cheap telecommunications, powerful computers, and data-driven techniques of financial engineering of the kind that make transactional investment banking possible. The problem that has yet to be solved, said Alan Morrison, is that neither market participants nor market commentators nor market regulators have yet adapted to the change which has taken place. He stressed trust is intrinsic and enforcement automatic, while contract is a legal device in which hard and blunt instruments such as contracts and courts replace reliance on the soft and tacit constraints of trust and reputation. This legalistic commitment requires legalistic enforcement; that is sometimes contrary to our moral sensibilities, said Alan Morrison. “Legalistic commitment devices and legalistic commitment regimes demand legalistic frameworks,” he said. “That is not to say that we have to tell people which commitments to make. Of course, we do not. But if I am going to write contracts with you I am entitled to expect that the legal system upon which I rely is friendly towards contracts. I do not think that we can resolve anything by wringing our hands and wishing the commitment was less legalistic and more like the things used to be in 1975. It never will be again. We cannot rely purely upon community norms and social sanctions. And the fact that we cannot do that is a bigger technological shift than the arrival of the computer because it shocks our ethical sensibilities. That is why people find ABACUS so difficult to deal with. The challenge that we face in the future in investment banking - and in finance generally - is dealing with businesses that encompass both relationship-based commitments and entirely contractual commitments. The reputational demands of these businesses are different. The guys in the trading room frankly do not care much about institutional reputation because all they need is a reputation for being competent and clever. The guys engaged in the relationship business do care enormously. These things are in conflict. One way to deal with that is for the banks to break themselves up. We see this happening endogenously, without legislation, with the emergence of things like boutique banks. But there is a value to having a large universal bank. What we do about this conflict, I do not know. But I think it is the most interesting question that faces us as we try to chart a path into the future.”



The future of finance

The concluding panel discussion was between Floor Knoote of Child and Youth Finance International, Min Lee of PlayMoolah, Sharan Jaswal of MyBnk, and Lisa Halpern of Kiboo, moderated by Maggie Philbin of TeenTech.



Floor Knoote



Min Lee



Sharan Jaswal



Lisa Halpern



Maggie Philbin

The future of finance

Maggie Philbin opened the session by commenting that she thought it was “incredibly symbolic” that a session devoted to the future of finance was all-female, and that its participants were all working with young people.

Floor Knoote explained that 1.2 billion of the 2.5 billion people that do not have access to finance are children or people aged between 15 and 18, who will in the next three years reach adulthood. “90 percent of those young people have never had any official experience with the financial system,” she said. “They have never been engaged in the financial system or had access to a bank account.” The goal of Child and Youth Finance International (CYFI), said **Floor Knoote**, is to ensure that all young people and children reach their potential as “economic citizens” before they reach adulthood, in the sense that they have access to a bank account and know how to manage money. CYFI proposes that financial, social and livelihoods education combined with financial inclusion are the building blocks of economic citizenship for children and youth. She thought this required action from banks as well as individual young people. “While there are a lot of really great trends in creating access and creating products for young people, there is no national infrastructure to increase inclusion for children,” said **Floor Knoote**. “So what our organisation is trying to do is build national platforms in order to engage all stakeholders - academics, NGOs, regulators, education providers and private banks - to help us create a national strategy for financial access for children and young people.” She added that Child and Youth Finance International created a financial education curriculum with UNICEF and the OECD which includes not only learning how to deal with money (financial), but also the rights of the individual and other individuals in an economic system (social), the effects of business success (livelihoods), and keeps in mind differences between developed and developing countries. “If you look at children from the United Kingdom and the Netherlands, if their parents open a bank account they make transactions and learn while doing at quite a young age,” said **Floor Knoote**. “But street children from rural India are handling money every day, and should be able to open a bank account of their own. When interviewing street children, who were making money, we asked them whether they were saving or not. They usually answered, ‘No.’ When we asked why, the answer was often, ‘Because we are not able to open a bank account, so we spend it at night, because otherwise our money is stolen.’ They had no incentive to save whatsoever. They tried to open accounts with local lenders, but they were cheated, so there was no way for them to access the financial system. We think that at a young age children should have the right to be stakeholders in their own financial situation, which goes beyond the promotional piggybank, so they can be stakeholders in their own economic future. We think that around the age of 12 or 13 would be the right age to start practising.” She added that more research needs to be done on what delivery channels work best for which populations in delivering financial education.

Min Lee said the inspiration for PlayMoolah was the realisation that financial education began after people got into financial trouble, and not before, and that all the materials were tedious and dry, because they were heavily text and knowledge-based. Curriculum and standardised tests had not been proven to be very effective - even with the knowledge, many don’t take action in real life (similar to health education). PlayMoolah has its roots in persuasive technology to design for knowledge, attitude, and behavioural action. “We are a technology innovation company that enables smart decision making. By combining the power of play with behavioural research, we create engaging experiences for young people to co-create, experiment, and show us what kind of future they want” she said. “We have a couple of layers to it. The first layer are the games, stories, and tools. Beneath that, we have an action platform where we work with banks and schools to close the gap and effect actionable behaviour in the real world. It is rather like a Montessori playground where children can save in banks, give to their favourite charities, and spend in a toy store with a virtual wish list.” **Min Lee** argued

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that education is changing so much that the teacher-pupil model has its limitations. “Children expect a level of engagement in learning,” she said. “They do not just consume anymore. So we get really wacky with our stuff. We do not think just about curriculum, but we look at the life goals of the user, and simulate consequences so that they can be visualised and managed. We also make it simple and actionable - there are only five ways you can use your money. You can earn, spend, save, invest and give. A six-year-old understands that; a 20-year-old understands that. We change the context in which you do the five things as the child grows older.” She added that PlayMoolah was also gathering data on how children and young people are using their money, and how their personalities govern their relationships with money. “Are you empowered by it, or is it controlling you?” asked **Min Lee**. She added that PlayMoolah was also providing teaching aids to adults and, although these have taken the form of guidebooks rather than games, the games developed for children encourage children to engage their parents in the learning process, where the goal is to spark money conversations between parent and child. In development, is also a mobile app called WhyMoolah for graduating students entering their first jobs to simulate life’s big decisions and visualise the consequences over 60 years.

Sharan Jaswal said MyBnk delivered financial education to young people in schools, colleges and youth groups. Its inspiration was the success of a micro-finance project in Bangladesh, in which small, low interest loans transformed the financial literacy and business confidence of young women in rural communities. “We started by setting up small, informal, youth-led banking schemes within schools,” she said. “We trained young people and they opened up a bank at lunch in a room at their school. They and their peers can save regularly within school. They can also take out small interest-free loans to set up their first enterprising projects. It is really the young people that lead the bank and figure out how they want to engage their customers - what incentives they want to give them.” **Sharan Jaswal** said 95 percent of the young people that participated in a MyBnk programme said they wanted to save. She said that, on average, young people were saving £3.54 a week, or 59 per cent of the average pocket money of young people of that age. “We have queues outside the door of young people wanting to save their money in this informal banking system,” said **Sharan Jaswal**. “With vulnerable young people, we get them to do something called a de-motivator, which basically looks at something that you spend on regularly, how often you spend on that, and how much that equates to over a year. We might give them, for example, Starbucks. Someone who is paying £2.60 every single day ends up spending a big number. We have a lot of our young people in those settings. They are calculating how much they are spending a year on cigarettes, on weed, on cannabis, on drinking, on going out, on getting their nails done. They are living on benefits but they want to get their nails done and their hair done every single month. We really see the penny dropping in their mind. It is not about us saying to them, ‘You should stop doing that.’ A lot of the time, they actually want to cut it down. Recently, I did a session with a young lad who had left the care system, and he calculated that he was spending £3,100 a year on cannabis. Where he was getting the money, I am not too sure. But he said, ‘I was thinking of having a New Year’s resolution to stop.’ When I saw him again, he said, ‘I am still not smoking. I am saving so much money.’ So it is those small actions that they can take. It is not about something huge that they cannot envisage. It is bite-sized chunks that they can achieve. Because once they do that in a small way, then they can start thinking about doing it in a bigger way.” MyBnk also hosts interactive workshops, engages in preventative work within schools to prevent young people getting into financial difficulties, and works with vulnerable young people, including those who have been in prison, she added. “MyBnk believes that everyone needs to learn about money,” said **Sharan Jaswal**. “92 per cent of adults in the United Kingdom have never received any financial literacy training, so it is not surprising that in this financial crisis over a quarter of adults also have no savings. It is about getting young people to learn the importance of money, so that as they get older

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they can really shape a better future for themselves than the one we have created.” She added that the school curriculum in the United Kingdom left little room for financial education, and that most teachers do not feel confident about teaching finance anyway. This is why MyBnk is campaigning for financial education to be made compulsory, said **Sharan Jaswal**, and time to be set aside to teach it properly. “You can open a savings account in your own name at the age of seven, and a current account by the age of 11,” she said. “But each bank has different rules, and each account has different rules as to whether young people can actually access the money themselves with or without parental consent. So a lot of our young people have bank accounts but they do not know where they are, they do not know how to access them, or what kind of account they have. They do not understand how it works. They like the way that they can engage from the age of 11 with the MyBnk account. They can keep a savings diary and track what they are saving. They can actually log in online and see their balance. They can make plans. But they are not aware how they can engage with a real sort of bank account, and the real bank accounts are not necessarily bank accounts that are designed for them to engage with either.” **Sharan Jaswal** added that MyBnk also teaches young people the history of economics, money and taxation, and encourages them to consider the social effects of their banking activities. “We encourage the young people, when they take out a loan from us, to start an enterprise project that not only makes money, but also makes a difference,” she said. “We say that business nowadays is not just about making a profit. It is also about making a difference to yourself, to your community and the wider world around you.” **Sharan Jaswal** said that MyBnk also engaged parents of undergraduates in a joint workshop dubbed UniDosh. “It was about university finance and what young people need to know before they step out into that world, part of which involves, for a lot of young people, a big sum of money being deposited in your bank account,” she explained. “I remember when I went to university it was the first time I had seen four figures against my name in a bank account. And as someone who had never received any pocket money growing up, and with parents who never talked about credit or even money to me, it was a really dangerous combination. I spent it within the first couple of weeks. My rent bill came, and suddenly I was overdrawn before classes had even started. So with this programme we deliver it to parents and their children at the same time, but for some activities we separate them. The parents make a budget for going to university, and then the young people make a budget. We make it anonymous, so the children are not too worried about what their parents would think. The differences were really phenomenal, between how parents thought that their children should manage their money, and the young people would. Through that, we saw the obvious differences in how the young people and their parents viewed spending. The parents got a little bit of a shock at what their children were planning to do at university. But we also saw that the parents did not have that good a financial knowledge about the topics that we were covering either. They did not know the tax rates, or the minimum wage rates, and they did not know how student finance and tuition fees worked. So they really learned a lot. The way that we were teaching them - through games, through drama, through activity, through competition – also worked really well. It was not necessarily a style the parents were used to, but it really engaged them.”

Lisa Halpern explained that Kiboo is a technology that focuses on teaching 15-to-22-year-olds and their parents about money. “I started the company six years ago after practising law, tax, trust and estates, dealing with very high net worth individuals trying to teach their children and grandchildren about money, and seeing a complete disconnect,” she said. “That is because young people socialise differently. They interact with technology differently. In the United Kingdom, the average age of a child getting a smartphone is ten. The average age at which they get their first bank account, if they get one, is probably around 16. There is something wrong with that. So I decided to build a new way to bank, starting from the customer experience backwards.” **Lisa Halpern**

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says the company launched in the United States in partnership with a bank, emphasising that Kiboo aims not to disrupt mainstream banks, but to work with them. “We look at the banks as facilitators,” she said. **Lisa Halpern** added that Kiboo endeavours to put finance into a wider social context. This might be through their resource library of original content called Know Your Money® or by intelligently introducing tips at relevant moments. “If our Giving Cause is for clean water, we will tell our customers about the cause, and that \$20 provides clean water to a person in a developing country for 20 years,” she said. “That gives them a perspective on where their money is going and how it relates to the bigger picture.” **Lisa Halpern** noted that young people acquired basic financial education from their parents (“How much does it cost?”) but when they went away to college the environment took over. She said the average university student in the United States thought their starting salary would be \$73,000, making them more comfortable running up student debt, when in fact it will be \$40,000. “It is very interesting how you will make different choices, even though you may know that it is not the right choice,” she said. “We are playing around with how we make the initial education sticky - how you keep that going.” One solution was for parents to encourage children to contribute to household bills, and to purchase their own mobile telephones. “If you give your child a telephone and they lose it – these phones get smashed or cracked, or whatever – they say, ‘Dad, I need a new one,’” said **Lisa Halpern**. “When they actually purchase that telephone on their own, with their own money that they have either earned or saved, they will protect that phone so much more than they did when it was given to them.” She was not convinced putting financial education on the school curriculum would work quickly. “It is one thing to put a curriculum in place, and it is another thing to teach it effectively,” said **Lisa Halpern**. “We have got to figure out how we embed it.” One suggestion she made was to re-design and re-name current accounts. “The product needs to be spending, saving, giving, and it should not be called a current account,” said **Lisa Halpern**. “They have got these complex names. The decisions within the bank that I am seeing are based on the product line versus the needs of the customer. Once you start focusing on the needs of the customer, then you start going to where you want to go, and it should be digital because that is where young people are.”

A Report on the Future of Finance Conference

By Oliver Sier (age 11), School Captain, Heath House School.

On Wednesday 29th and Thursday 30th May 2013 I attended the Future of Finance Conference at Oxford University. The conference was organised by the Financial Services Knowledge Transfer Network. I was there to try to learn about finance and write a report on what I had seen.

Wednesday 29th May

My father opened the conference and was immediately followed by Eric Beinhocker from INET who described the different views that people have about the structure of the banking industry. Some people view the banking system as a structure that can be modeled and understood with simplistic rules and tools. Other people view banking as a complex adaptive system. A simple structure would be one that is just about lending, borrowing and investing money, whilst the complex structure would involve understanding how the different agents (such as people or companies) interact. When these agents changed or innovated then the structure would change slightly, making the simpler model not work any more. The problem is very complex as there are so many different agents. This first presentation really set the scene and made me understand a bit more about banking than before and helped me keep up with the conference. Eric was a very good speaker and made things easy to understand.

Afterwards I tried to think about what Eric had said in a way that I could explain to my friends and I realised that I could use making a model airplane as a good metaphor. The simple model view would be that if you follow the assembly instructions of a model plane exactly then you will end up with a model that is perfect in every way. In real life though, even if you follow the assembly instruction exactly, the pieces are never perfectly made, never fit together quite right, and you end up with a model airplane that is always a little wonky. To achieve a better model airplane you need to be a little creative and adapt the instructions to suit the situation. Follow the instructions and the plane is imperfect. Adapt the instructions and be flexible as you go along and the results are better.

The shadow banking session, which followed Eric, was very confusing and I didn't understand it. But when Bruce Cahan showed me a picture of how simple a bank could be I wondered why it was so confusing and why it needed to be so complicated. Banking is only about borrowing, lending, spending and giving, nothing more.

In the session talking about the value of Science to the finance industry I learned that it is indeed very important. I saw a demonstration of a complex system similar to that described earlier by Eric. In this virtual model you could fast-forward to see what might happen in the future, which sounds useful. This way you could solve problems

The future of finance conference

before they arise. The two computer scientists explained how computers could notice patterns from the past and apply them to now and the future so that we could recognise what was going on.

Thursday 30th May

Throughout the day the various panels discussed innovation. In one session the panelists discussed what would be the right mixture of innovation, regulation and ethics for the finance system. Personally I think there should be a bit of everything. There must be some rules as well as some new ideas.

In another session my father led a discussion on ways to innovate for the finance sector. Innovation is very important in the finance industry because otherwise nothing would change. Given the current crisis things must change otherwise the finance industry will only make things even worse.

The last panel discussed the future of finance. In this case it meant young people. I think this was what the conference was really all about. Young people are the future; they will spend money and use other financial products, and they will be the future workers of the finance industry. So young people need to learn about money, not just how to count it and give change, but learn how to save, invest and know how banks work. Websites like PlayMoolah, built by Min Lee, should be more common and available. Since I started using PlayMoolah I have learnt more about money and how, for example, to save. Maggie Philbin, who chaired the panel, pointed out one type of bank account is called a current account, which is confusing for children. Isn't there a more obvious name?

At the end of the panel I was asked about my thoughts on banks for young people and I replied "Why should I be able to put my money in the bank but not be able to get it out again until I am much older. What is the point of saving if I can't spend my money when I want? I think it would also be good if there was a web application for young people where we could design our own bank to our own needs. We could make it fun and not dull. This would help me to save or teach me more about banking."

Overall the conference was really interesting although there was a lot I didn't understand. Some of the speakers were really clear though and made difficult things clear.

Oliver Sier.



Collaborating Partners





All Street is a not for profit organization that brings thought leadership to the alternative finance space. Our social mission is to educate everyone from merchants and consumers to lawmakers and researchers about the possibilities, challenges and future of alternative finance. Our web platform allstreet.org is the place to go to find out what's happening outside mainstream banking. Everyone can share their alternative finance knowledge through our website and we are committed to give free access to all ideas through which all sides of a question, cause or solution may be explored.



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The Institute for New Economic Thinking at the Oxford Martin School (INET@Oxford, www.inet.ox.ac.uk) is a multidisciplinary research institute dedicated to applying leading-edge thinking from the social and physical sciences to global economic challenges. The Institute includes over 40 scholars from economics, psychology, sociology, anthropology, mathematics, computer science, physics, biology, ecology, philosophy, history, public policy, business, and law. INET@Oxford is applying its multi-disciplinary perspective to issues ranging from financial system stability, to economic growth and innovation, economic inequality, ethics and economics, and sustainable economic growth. Institute researchers work closely with policy-makers and leaders in business and civil society to bring new economic ideas into debates and practice in the public, private, and non-profit sectors.

INET@Oxford was established in May 2012 as a partnership between the University of Oxford and the Institute for New Economic Thinking (INET, www.ineteconomics.org). INET is a non-profit foundation based in New York that was founded in 2009 to broaden and accelerate the development of new economic thinking. INET@Oxford is a part of the University's Oxford Martin School (www.oxfordmartin.ox.ac.uk) and the Institute's staff includes faculty members from across the University's departments, schools and colleges, post-doctoral researchers, graduate students, and visiting researchers from around the world.



The Financial Services Knowledge Transfer Network (FS KTN) operates as a platform connecting organisations, businesses and individuals across the financial sector to foster innovative solutions.

The FS KTN is a common ground for financial services experts, academics and technologists. It is supported by key delivery partners and a host of associate partners. The KTN covers the full range of financial services sectors including banking, capital markets, insurance/reinsurance and buy side as well as related sub-sectors.

Through its events, website, newsletters, publications and industry consultation the FS KTN acts as the interface between these often disconnected sectors. The discussions and connections made through the FS KTN will define the key challenges facing the financial services industry and, through the development and exchange of knowledge, find plausible solutions.



Founded in 2007, the Oxford-Man Institute of Quantitative Finance is the home of interdisciplinary research in quantitative aspects of finance at the University of Oxford. Drawing together researchers and students from many departments in the University, as well as academic institutions across the globe, it has particular strengths in computational finance, financial econometrics and hedge fund research.

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UCL FINDS (Financial Industry Series, www.uclfinds.com) is a student-run forum that hosts high-impact conferences, thought leadership debates and research on financial topics. Founded in 2010, it is a leading UCL society with the purpose of providing students, academics, practitioners and regulators alike with the opportunity to lead the debate on the critical topics facing the financial industry agenda. Attendees can not only develop a comprehensive understanding of the field but also benefit from unique networking opportunities and diversity from collaboration with economics, engineering, law, maths, psychology, public policy & statistics.

In the past, our events have met great demand from students at UCL and other top UK universities as well as industry practitioners and public sector. In order to make our events accessible to as many students as possible and to maintain the high standard that we strive towards, we count on the support of our gracious partners.

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