



FiNexus

Innovation through Knowledge Transfer 2014
From KTN to Future Knowledge Transfer in
the Financial Services

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Summary



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- The Financial Services KTN (FSKTN)
 - Overview
 - Model
 - ESRC Collaborative Funding for Research
- FSKTN successes
 - Overview
 - Case Studies
- Emergent challenges
 - Overview
 - Crowdfunding
 - Pension Fund Value Chain
- Future of KT for the sector
 - FiNexus
 - Further RC Funding

The Financial Services KTN (FSKTN) Overview



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- The rationale
- Funding model
 - Technology Strategy Board
 - ESRC – strategic funding
 - NERC – tactical funding
- Challenges of working with the sector
 - “We don’t like working with Government Funding”
 - Who owns the IP
 - Secrecy
 - Competition
 - Data
 - Speed

Our model



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- Initial plan for the FS KTN was based around event activity and report publication in key strategic areas of focus
- Became obvious we would exceed our targets so we developed a project-based approach
- Validated and supported by an independent Board of experts from Industry, Academia and other stakeholders
- Industry experts use credibility with finance to understand and filter challenge-led projects
- Workshops and seminars used to refine topics and potential collaborators
- Facilitation and project management key to success
- Links with Government and a range of Networks help avoid duplication and create efficiency
- We picked subjects where the social impact would be considerable, where our expertise and contacts could be brought to bear most effectively, where there was little traction and the space was not crowded – hence we could have the most impact

The ESRC collaborative funding mechanism



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- KTP never worked for FSKTN and rarely did standard ESRC 'calls'
- Research 'Impact' hard to assess so KTN developed a working definition
- ESRC collaborative funding mechanism designed to allow flexibility, speed and preferences needed by FS industry whilst maintaining ESRC Independence, Excellent & Impact framework
 - Projects up to £200k
 - 50% funding from ESRC, 50% from industry
 - No call – teams put together collaboratively
 - Rapid implementation (as low as 2-week turnaround from application)
- Examples:
 - High Frequency Trading – fully funded with £300,000 from industry
 - Behavioural Decision Making – fully funded with £10,000 from industry
 - Risk Culture – fully funded with £50,000 from industry
 - Modelling Intraday Cash Liquidity – fully funded with £143,300 equivalent from industry
 - Extension to the Intraday Cash Liquidity
 - Business Angel Exit Strategies – fully funded and completed with £50,500 equivalent from industry
 - Modelling Intraday Cash Liquidity and Systemic Shock proposals - secured follow-on funding for £200,000



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Overview of Successes



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- Over the 5-year period over 5,700 people from over 3,800 organisations participated in 200 large events and workshops where FS KTN was organiser, major sponsor, co-sponsor, or a catalyst.
- We managed key projects looking at Catastrophic risk modelling, Pension and Retail fund reform, Uncertainty including the PURE network, systemic risk, renewable energy and others
- Have been at the heart of all debates in parliament, regulators and media on fund transparency
- Operated at the heart of the burgeoning Fintech industry leading programmes on Crowd Funding, the Future of Payments, designed and ran hackathons, thought leadership on all topics including visualisation and Big Data
- Generated over £2m of collaborative research programmes between industry and academia and over £12m in other funding
- Ran a series of workshops to explore the key research issues in finance across 6 different themes for ESRC
- Worked effectively with the Bank of England, Regulators, Cabinet Office, House of Lords, Government Departments, the ELC, FSTIB...and of course academia and industry on many of the above issues

Case Study 1 – Fund Fees and Charges



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- FSKTN presented a paper on retail fund costs to the Government Office for Science Foresight Programme in 2010 on the high costs of fund ownership. This was presented to the FSA and the Treasury
- Over the subsequent 3 years the KTN has carried out similar analysis on pension fund costs and been at the heart of the debate on fund costs. We have worked with Regulators, Industry, Commentators, Parliament (both sides of the House), the Lords, Trade Unions, the Press, Broadcasters...
- As a result not only has the industry changed direction in its acknowledgement of costs, there have been a number of government and regulatory initiatives to understand and manage costs to the consumer
- These initiatives are ongoing and FiNexus has recently been asked to prepare the definitive literature review on pension charges and fees. FiNexus is also working with the STFC facility at Hartree to develop better pension visualisation tools for consumers, and is leading an industry delegation there this week
- (See emergent challenges for more info)

Case Study 2 – OASIS Loss Modelling Framework



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- Model and data dependency issue identified in catastrophe modelling for insurance industry
- Led an industry initiative to distill academic knowledge of environmental risks to produce catastrophe models that could be used by Insurance industry or governments to understand catastrophic risk.
- Raised over £12m from Industry and Climate KIC to fund the project
- Open source not for profit business model attracted academics and Industry partner worldwide

Case Study 3 - Agent Modelling of Banking system and market stability



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- FSKTN first worked with the BoE and academia on this in 2011 and managed the development of an agent model of the banking system for the Bank of England
- Agent modelling seen as an important new technique to understand complex dynamic systems of markets and to help understand market and banking stability
- This resulted in the ongoing relationship between INET at Oxford and the BoE, and a further project between RBS and a collaboration of three Universities to build an agent model of the intraday cash liquidity markets



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Emergent Challenges - Overview



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- Disruptive Technology and the challenges posed by the needs of the consumer. E.g.:
 - Open source tech – Open Gamma, Oasis...
 - Lease finance market
- New asset classes and managing old ones
 - We couldn't (and still can't) manage OTCs properly. We couldn't deal with mortgage-backed securities, CDOs, CDO-squared
 - Given the inventiveness of practitioners how are we going to deal with, say, mining rights? How are we going to manage class actions?
 - LEIs, CUSIP's, Corporate Actions...the list goes on and on
- Transparency – a surrogate for TRUST
 - FS is complex. Companies are complex, value chains are complex
 - Regulator demands transparency
 - Consumer demands transparency

It is worth noting that, whilst there is plenty of 'fintech' activity in the crowdfunding and mobile payments arenas, there is little entrepreneurial activity focusing on opportunities...

...and all these opportunities are ripe for funding via alternative investment strategies such as crowdfunding

Some words on Crowd Funding



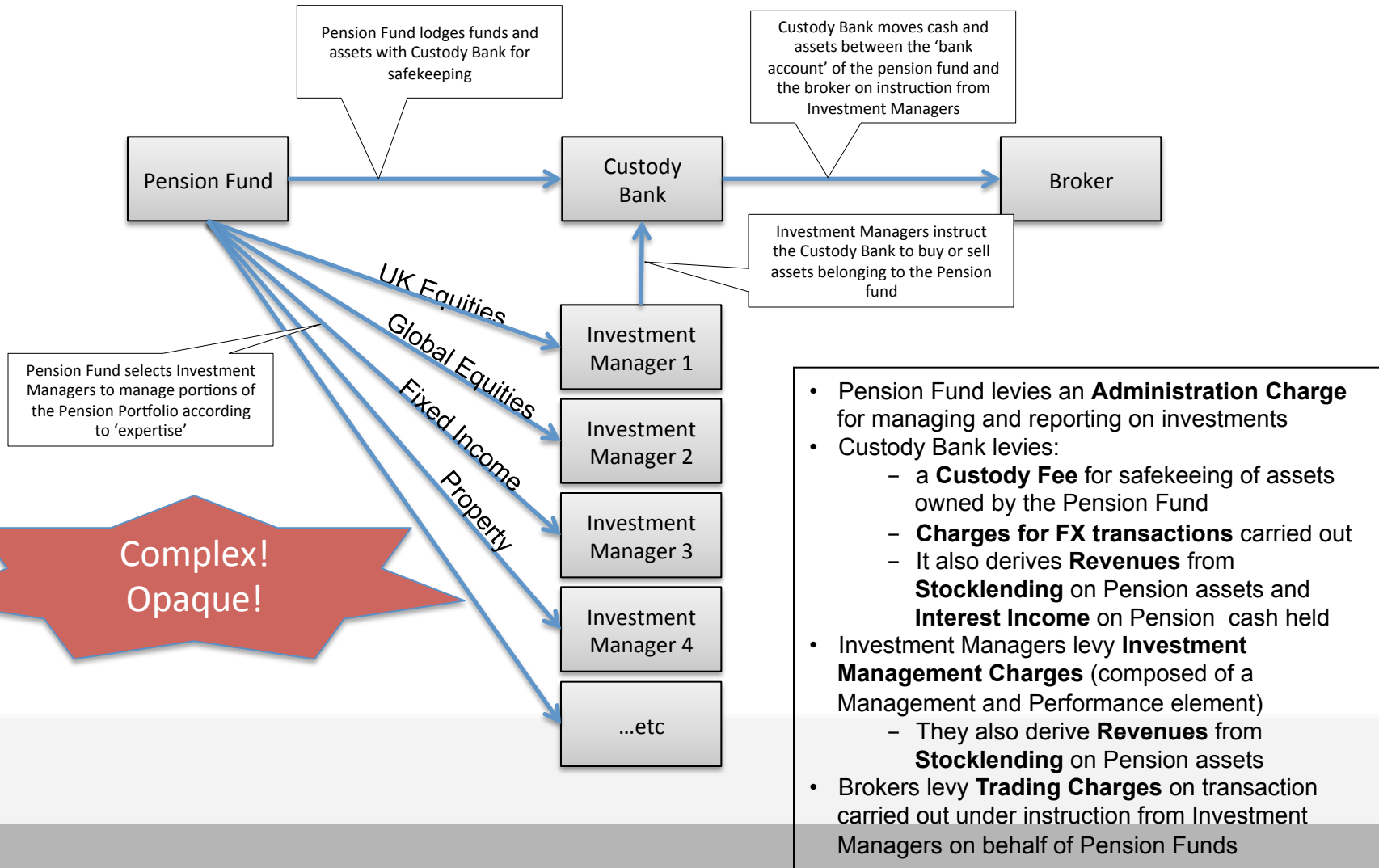
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- Debt vs. charity vs. 'pseudo' equity vs. equity
- Debt CF filling gap where banks fear to tread – but does it?
- Equity CF capturing the equity risk premium – but does it?
- Equity CF – shareholder agreement is most important
- Other issues:
 - Self funding (moral hazard)
 - Overfunding (extreme moral hazard)
- Does this make both debt and equity CF new asset classes?
- If so, and it can be properly understood from a risk and return basis, is CF suitable for institutional investment?
 - £3tn AUM in UK (Pension, Life, Retail)
 - 5% average asset allocation in 'sex and violence' (VC, PE, HF)
 - If only 0.1% invested in CF this would be £3bn!
- So regulation is key...but not to stifle, to mitigate consumer risks

Case Study – The Need for Innovation and KT in The Fund Value Chain



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Where are the Costs Found – Some Real Numbers (KTN-led research)



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Total Cost of Ownership =	Admin Charges	Investment Management Charges	Custody Charges	Equity Trading Charges	Fixed Income Trading Charges	Alternatives Trading Charges	Stamp Duty & Taxes	FX Charges
Data Source	Local Authority Pension Fund Annual Reports and FOIA Requests	Local Authority Pension Fund Annual Reports and FOIA requests	Local Authority Pension Fund Annual Reports and FOIA requests	FOIA requests for raw IMA Disclosure Tables to Local Authority Pension Funds	Unobtainable at this time	Unobtainable at this time	Calculated from FOIA IMA Disclosure Tables	Unobtainable at this time
Sample Period	2001-2011	2001-2011	2001-2011	2004-2009			2004-2009	
Sample Size	1117	1122	107	305				
Low	<3 bps	<5 bps	<0.5 bps	Cost <1 bps Churn 3%				
High	>90 bps	>80 bps	>6 bps	Cost >120 bps Churn 3800%				
MEAN	12.6 bps	25.4 bps	1.2 bps	Cost 10 bp Churn 140%	?	?	65+ bps	?
(Notes)				Data received from FOIA requests had been heavily redacted and obscured			= 50bps x 130%	

Mean Total Cost of Ownership is therefore 109bps (>1%) NOT including the costs of Fixed Income Trading, Alternatives Trading and Foreign Exchange, but could be MUCH higher

My Best-guess figure for the TCO



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Somewhere between 2.5-3.5%
(Retail funds about the same)

- Think what this means:
 - The 2010 IFSL research paper on Pension Markets placed real returns for UK Pension funds (i.e. inflation adjusted) in the decade up to 2010 at 1%
 - Reduce the 2.5-3.5% by 1% and you double the longterm performance of a pension fund. OR, to put it another way, increase the size of the 'pot' after 30 years by 25%
 - You could also add back 1% into performance by...increasing performance (!) or adjusting annuity values. But as every small business owner knows the best way to move into the black is not to sell more, it's cut costs.
- Lets look at the Pension and Retail Investment market:
 - £3tn AUM in UK
 - 2.5% to 3.5% is £75bn to £105bn per annum
 - Government is consulting reduce costs
 - Let's say the aim is to cut out costs equivalent to approx 2%% of AUM
 - If we reduce consumer costs of fund management to 2%, this means intermediating a market of £30bn

How Can We Cut Costs?



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METHOD 1:

- Average employee compensation ratio within this industry value chain is 50%, compared to a tech and data spend closer to 20%.
- So cut headcount (or salaries?). To achieve £30bn of savings this means 100,000 people (£30bn/£300k)
- ***This can only be achieved through technology, innovation and agile intelligent data***

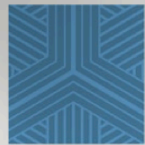
METHOD 2:

- Grow the asset base
- To achieve capped costs of 2% whilst not losing 100,000 jobs means managing £4.5tn
- ***This can only be achieved through innovation and better financial inclusion***
 - New models of asset management
 - Shorter value chains with less intermediaries
 - New products and delivery mechanisms to attract new consumer segments (VISUALISATION!)
 - AND MANAGING SMALL POTS

So we can lose jobs...or grow our way out of this crisis of trust, transparency and cost management



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FINANCIAL SERVICES INDUSTRY

BANKING

INSURANCE

ASSET MANAGEMENT

MARKET INFRASTRUCTURE

SAMPLE CHALLENGES (GENERIC - SPECIFIC)

- Accessing disruptive innovation
- Transparency
- Cost management through technology
- Cyberrisk
- New asset classes
- Accessing solutions to specific problems
- Modelling intraday cash liquidity
- Code optimisation for risk modelling
- Computational challenges in capital modelling

NETWORKS NETWORKS NETWORKS



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SOLUTIONS (EXPERTISE TO INFRASTRUCTURE)

- Academia
- Entrepreneurs
- Technology Companies
- HPC Centres
- ESRC Big Data Network

E - INFRASTRUCTURE



I N N O V A T I O N

