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from the Economic to the Social

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Seeing, Knowing, and Regulating Financial Markets: Moving the Cognitive Framework from the Economic to the Social

Julia Black ^{*}

Abstract: In the wake of the financial crisis, significant questions have been raised as to the appropriateness of the economic conception of markets and of behaviour that has for the last few decades dominated policy makers in financial regulation. In response, some regulators are starting to revise their understandings of behaviour of actors within financial markets. However, the conception of the dynamics of markets themselves remains largely intact. This article argues that in order to regulate financial markets, we need a more sophisticated and realistic cognitive framework through which to analyse their dynamics and on which to base their regulation. To that end, the article develops a social conception of financial markets, drawing on institutionalist theories, social network theories, and the sociology of science and technology, including technical systems. Whilst there are no easy answers, the move to this social conception of markets provides an alternative cognitive framework for how regulators see and know financial markets: how they understand the behaviour of actors within markets, the function of markets, their structure and organisation, the role of calculative devices in price formation and governance processes, the power relations and interconnections between actors within markets, the role of trust and confidence in markets, the relevance of internal organisational dynamics to understanding behaviour of organisations within markets, and the role that regulators and supervisors themselves have in constituting markets and shaping decisions that market actors make.

Key words: financial regulation; institutionalism; social network theory; regulatory technologies; economic sociology; science and technology studies; responsive regulation.

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INTRODUCTION

On a visit to the London School of Economics at the height of the financial crisis in November 2008, the Queen famously asked the gathered assembly of leading economists: ‘why did no one notice this was coming?’ Their response, a few months later, was that it was down to a ‘failure of collective imagination’.¹ The causes of the crisis will be debated for many years to come, but this attribution of the crisis to cognitive failures by economists is an important moment in the analysis of those causes. The implication is that we need a better imagination of financial markets if we are to have a chance of preventing another crisis of the same magnitude occurring again. Regulators, and others, need to build alternative cognitive frameworks, new ways of seeing and knowing financial markets, which are different to the ways in which financial economists see and know, if they are fully to understand their dynamics.² Otherwise they risk regulating a mirage: a false image of markets and the institutions, organisations and individuals that comprise them.

The aim of this article is to start that process of ‘re-seeing and re-knowing’ financial markets by developing what is termed a ‘social’ conception of financial markets and to draw out some implications for regulators to enable them to regulate markets more responsively. By ‘responsive’ I do not mean the crude sense of being captured, but in the sense of understanding how markets and market actors are operating, how regulators should respond (or even anticipate) those operations, and recognising the effects that the regulators’ own edicts and activities are having on their operation.³

The central argument that the article develops is this. The global financial crisis demonstrated that market actors, governments and regulators were operating on the basis of a set of understandings about how markets worked that were based in neo-classical economics, and in particular rational actor theory, which were largely erroneous, with disastrous consequences. Refinements to the neo-classical economic model of markets, through behavioural economics’ adoption of cognitive psychology, have got to the point of conceptualising markets as places where boundedly rational, cognitively biased individuals interact. But even the insights of cognitive psychology focus predominantly on individual psychology, and downplay the role of social structures in shaping beliefs and preferences. Furthermore, behavioural economics focuses only on the rational actor aspect of the neo-classical conception of a perfect market. It does nothing to disturb the assumptions that markets are homogeneous, consist of the summation of bilateral

¹ The British Academy Forum, ‘The Global Financial Crisis – Why Didn’t Anybody Notice?’, June 2009; letter to the Queen dated 22nd July 2009 available at <http://www.britac.ac.uk/events/archive/forum-economy.cfm>. See also FSA, *The Turner Review: A Regulatory Response to the Global Banking Crisis* (London: FSA, 2009).

² There have been some fascinating recent works on how economists think: see in particular M. Morgan, *The World in a Model: How Economists Work and Think* (Cambridge 2012).

³ R. Baldwin and J. Black, ‘Really Responsive Regulation’ (2008) 71(1) *Modern Law Review* 59.

exchanges which take the form of ‘spot trades’ and do not continue after the transaction is complete, that markets are self-regulating, and that prices will reach an equilibrium. It also assumes that the process by which prices are agreed is through mutually beneficial agreement in which there are no power imbalances between the parties. There have been elaborations on this core model, for example through game theory and principal-agent theory, but these remain its essential elements.

Furthermore, the nuances and complexities which economics as a discipline has developed to refine that core model are often lost on policy makers. As Lord Turner has observed, the crisis was a crisis for economics ‘not so much because academic economics was monolithic – it never has been – but because in the translation of ideas from academia to public policy, a dominant, over-simplified and dangerous conventional wisdom developed’.⁴ Economics has the advantage over other social science disciplines when it comes to influencing policy makers, not necessarily because it is right, but because it is useful: it provides a set of analytical tools and policy prescriptions which are attractive in their apparent simplicity and universal application.⁵ In presenting all markets as homogeneous and all actors as conforming to a single model of behaviour, it is able to make predictions with respect to any market or any individual, given a certain set of assumptions.

One way to proceed would be to stay within the cognitive paradigm of economics to develop a more nuanced understanding of markets using insights from financial economics and other economic-related disciplines. After all, any discipline has internal fractures, and so presenting it as a unified whole is always misleading. This article takes a different approach, and seeks to re-conceive markets not in (purely) economic terms, but in social terms, widely defined. Drawing primarily on institutionalist theories, social network theories, and the sociology of science and technology, including technical systems, I suggest that we can develop a far more enriched, and realistic, conception of markets than the relatively sparse economic model assumes – and furthermore that we need to do so if we are to regulate markets effectively. In particular, regulation requires close engagement with and understanding of power and behaviour, which in turn requires regulators to find out what is actually happening in markets and firms, rather than to make assumptions.

In this social conception of markets, which will be developed below, markets are defined as mechanisms and places of coordination and exchange that may take different organisational forms. They are mechanisms and places where boundedly rational, cognitively biased actors interact, but the beliefs, preferences and behaviour of those actors are shaped by the institutional structures and the

⁴ Lord Turner, ‘Reforming Finance: Are We Being Radical Enough?’ 2011 Clare Distinguished Lecture in Economics and Public Policy 18 February 2011, p.26.

⁵ For discussion comparing risk and ‘market failures’ as justifications for regulation see J. Black, ‘The Role of Risk in Regulatory Processes’ in R. Baldwin, M. Cave, and M. Lodge, *Handbook on Regulation* (Oxford, 2012).

social networks in which they are situated. These influence, and are influenced by, the decisions those actors make and how they interpret their own interactions and those of others in the markets, in which they both participate and observe. As a result, markets have multiple characters in which relationships may be competitive or collaborative, for example, or short or long term. In particular, financial markets are heterogeneous: some components are characterised by bilateral spot trades, such as trading on equity exchanges, but others take the industrial-like form of production markets, in which investment products are created, warehoused, sold through distribution chains via intermediaries to ultimate buyers, for example the creation, warehousing and distribution of structured products or the creation and distribution of retail packaged products such as life assurance or pensions. Within markets, individuals have differential power arising from their social, political, cultural and economic capital, and from their calculative capacities. In their interactions, individuals may act in the pursuit of profit and exhibit a particular calculating logic. However, prices are not simply the outcome of a mutually beneficial agreement but the product of technologies of measurement and calculation, including accounting, audit, and risk modelling. These technologies are socially derived and moreover shape the behaviour which they purport to measure. Finally, through their exchanges, actors can create linkages of rights, obligations, and distributions of risk, that together constitute a system, which in turn is supported by material devices, including legal instruments and technical systems, such as contracts and electronic trading mechanisms. Through these devices, multiple individual transactions are transformed into complex systems of interactions and interdependencies.

The move to this social conception of markets from the neo-classical economic conception has quite fundamental implications for regulators. It provides an alternative cognitive and analytical framework for how regulators understand, *inter alia*, the behaviour of actors within markets, the function of markets, their structure and organisation, the role of calculative devices in price formation and governance processes, the power relations and interconnections between actors within markets, the role that they themselves have in constituting markets and shaping decisions that market actors make, the role of trust and confidence in markets, and the relevance of internal organisational dynamics to understanding behaviour of organisations within markets.

The article thus aims to develop an alternative way of seeing and knowing financial markets and the actors within them that will facilitate their regulation. It has two end points: a social conception of markets and the implications of that conception for financial regulators. The journey to those end points will necessarily have to take us through a number of theoretical fields, and apologies are in order for in a single article I will necessarily have to pick the most promising flowers from those fields and trample heedlessly over the rest. Further, whilst much of the journey will pass through well known ground, it is the synthesis of different elements of these theories that it is hoped will provide the ground for a

new and multi-dimensional analysis of markets, facilitate the development of new regulatory strategies, and provide a coherent cognitive and analytical framework in which to analyse existing strategies which deviate from the neo-classical economic conception but which are rapidly being fashioned in the cognitive void left by the (partial) collapse of neo-classical economics' grip on the regulatory imagination.

The article proceeds in a number of stages. The first section briefly sets out the neo-classical economic model of markets in general and financial markets in particular. The second section explores the modifications to that model being introduced under the moniker of behavioural economics. The third, and longest, section examines four sets of theoretical critiques made by those writing from a broadly sociological or anthropological stance with respect to neo-classical economics' conception of markets. These are that the cognitive framework of neo-classical economics ignores the nature and role of institutions (broadly defined), of social interactions and of calculative technologies in creating, shaping, and sustaining markets, and ignores the dynamics by which interactions can produce complex socio-technical systems supported by material legal and technical devices. Each of the critiques tends to emphasise certain elements of markets over others, however, leading to each to have a partial analysis. The fourth section therefore draws the pieces together to construct a multi-dimensional social conception of financial markets and draws out some of the key implications of this reconceived analysis of markets for their regulation, indicating how these implications differ from those which are derived from the neo-classical conception of markets. The concluding section argues that although the social conception of markets is more complex than that of the neo-classical economic models, it is a far more realistic one. It may be easier to regulate on the basis of a simplified model of markets, but as the financial crisis clearly demonstrated, it is also dangerous.

WHAT IS A MARKET? THE ECONOMISTS' SIMPLE ANSWER

In economic analysis, markets are mechanisms of exchange between competing buyers and sellers which result in the efficient allocation of scarce resources. A market has a set of familiar characteristics: there is a clearly defined product which is exchanged between buyers and sellers in return for a mutually recognised unit of exchange (money or its equivalent). In neo-classical economics, certain additional features are added for 'perfect' markets to exist: there are numerous buyers and sellers, with no barriers of entry to or exit from the market; all have perfect information, with no informational advantages and no time lags in the dissemination of information; the products being exchanged are homogenous,

there are no externalities, and there are no transaction costs. Further, that there is only one optimal outcome and that exchanges will produce equilibrium.⁶

In addition, neo-classical economics assumes certain behavioural characteristics for the individuals involved, the familiar rational actor or *homo economicus*: that individuals are utility maximisers, that they possess complete information which they can process and evaluate accurately, that their preferences are formed exogenously, separate from the exchange transaction, and that those preferences are stable and transitive. If they prefer apples to pears and pears to oranges, they will always prefer apples to oranges. Moreover, individuals make unbiased forecasts of the future.⁷

A market in neo-classical economic analysis is therefore a composite: it comprises both an activity and a model of behaviour, and assumes the combination of activity and behaviour will lead to outcomes which are certain, namely efficiency and price equilibrium. Further, it is both asocial and (politically) apolitical. It is asocial in that it assumes that individuals 'arrive' at the transaction with their preferences fully and exogenously formed. It is (politically) apolitical in that it assumes that the exchange relationship occurs without the need for any institutional structures, least of all that of the state.

In the context of financial markets, the dominant neo-classical understanding of price formation is the efficient capital markets hypothesis (ECMH), initially elaborated by Fama in 1970.⁸ The strong form of the ECMH is that share prices reflect all information available or otherwise. The 'semi-strong' form is that they reflect all available information; and the weak form is that they reflect the information provided by the historical sequence of prices. As a result, even sophisticated investors cannot systematically profit from newly available information as this will already be incorporated into the price. Moreover, as rational actors make decisions about the future in an unbiased manner, any price movement tomorrow will only reflect new information available today, and thus cannot be predicted. Stock market movements will thus exhibit a 'random walk', with no predictable trends. The theory has been modified over time, and Fama has accepted that prices do follow certain predictable patterns, but the central tenets of the theory are still strongly held.⁹ (Indeed Fama was awarded the Nobel Prize for Economics in 2013, though in a move which indicates the bifurcation in economic thinking, it was jointly awarded to Shiller, whose theories of behavioural finance are explored below.)

⁶ There are numerous expositions of the neo-classical conception: see for example D. North, *Institutions, Institutional Change and Economic Performance* (Cambridge, Cambridge University Press, 1990), 19.

⁷ See e.g. J. Elster, *Sour Grapes: Studies in the Subversion of Rationality* (Cambridge, Cambridge University Press, 1983); id, 'When Rationality Fails' in K.S. Cook and M. Levi, *The Limits of Rationality* (Chicago, Chicago University Press, 1990).

⁸ E. Fama, 'Efficient Capital Markets: A Review of Theory and Empirical Work' (1970) 25(2) *Journal of Finance* 383.

⁹ For review see B. Malkiel, 'The Efficient Capital Markets Hypothesis and its Critics' (2003) 17(1) *Journal of Economic Perspectives* 59.

The influence of ECMH on regulatory policy debates is clearly evident in two well known areas: the issue of whether firms listing on securities markets should be subject to mandatory disclosure rules, and whether insider dealing should be banned. Those who accepted the ECMH, particularly in its strong form, argued against both mandatory disclosure rules and bans on insider dealing as being either unnecessary and / or inefficient, on the basis that prices would reflect all information whether public or private.¹⁰ Proponents of the ECMH lost the policy argument in the case of mandatory disclosure rules, but had more traction with respect to insider dealing. Opponents of insider dealing ultimately won the policy debate, but only by side-stepping economic logic completely and arguing from the basis of the need for market integrity and confidence in the markets.¹¹

WHAT IS A MARKET? SOME ECONOMISTS' MORE COMPLEX ANSWER

Whilst there are clearly policy exceptions, a stylised view of the neo-classical conception markets has been remarkably pervasive amongst policy makers, as noted above. This is notwithstanding refinements and elaborations within the discipline of economics, including the presence of repeated interactions, analysed through game theory, and the incorporation of issues such as asset specificity, incomplete contracts and principal-agent theory.

As the Turner Review noted, five core propositions in the standard neo-classical model of financial markets have influenced regulatory approaches at the global and national levels (though to different degrees in different countries), and are subject to theoretical and empirical challenge in the wake of the crisis.¹² These are that market prices are good indicators of rationally evaluated economic value; that the development of securitised credit, based on the creation of new and more liquid markets, has improved both allocative efficiency and financial stability; that the risk characteristics of financial markets can be inferred from mathematical analysis, delivering robust quantitative measures of trading risk; that market discipline can be used as an effective tool in constraining harmful risk taking; and that financial innovation can be assumed to be beneficial since market competition would weed out any innovations which did not deliver added value.¹³

Whilst many of these nuances have been lost in the translation of economic thinking into policy making, the policy implications of these assumptions are that

¹⁰ See R. La Porta, F. Lopez-de-Silanes, and A. Shleifer, 'What Works in Securities Laws?' (2006) LX1 *Journal of Finance* 1 for review of the mandatory disclosure debates; see E. Avgouleas, *The Mechanics and Regulation of Market Abuse: A Legal and Economic Analysis* (Oxford 2005); H. McVea, 'What's Wrong with Insider Dealing' (1995) 15 *Legal Studies* 390 for review of the insider dealing debates.

¹¹ At least, they did in the EU: Directive 2003/6/EC of the European Parliament and of the Council of 28 January 2003 on insider dealing and market manipulation (market abuse), Recital 2.

¹² FSA, n 1.

¹³ Ibid, para 1.4.

regulators should do very little – markets will be self-correcting. There are two important modifications, however, which provide justifications for the state's intervention into the market within the neo-liberal paradigm. These are the recognition of the implications of transaction costs and the acceptance of market failures. In Coase's seminal work, assuming clearly defined property rights, in the absence of transaction costs, externalities will be transacted around or eliminated; the initial allocation of property rights is thus irrelevant as an efficient allocation will ultimately be attained through economic exchange. However, transaction costs are unlikely to be so low and therefore the initial allocation of rights is significant.¹⁴ As a result, property rights matter in shaping incentive structures. The normative conclusion drawn by others from this is that government intervention, including legal institutions, may be needed to minimise transaction costs and / or more efficiently allocate property rights.¹⁵

The Coase theorem has generated a swathe of literature both on the theory of the firm and on justifications for government intervention in markets, particularly with respect to the environment.¹⁶ A more expansive set of justifications for regulation derives from welfare economics, and that is the acceptance of a broader set of 'market failures' or instances where markets do not in practice conform to the model assumed necessary for perfect competition. This recognition has been critical to the founding of the contemporary justifications for the regulation of markets within neo-liberal ideology. States have long intervened in markets, particularly through the introduction of common units of measurement of weight and size.¹⁷ But the edicts of 'better regulation' are (to varying degrees in different domains and different countries) founded on the particular, political, acceptance of the neo-liberal view that political intervention in markets is only acceptable when markets fail to exhibit the characteristics which are necessary for perfect competition. In cases of market failure, so defined, a central coordinating body (the state) may need to intervene to provide what the market cannot itself provide.¹⁸ In financial regulation, as in corporate governance debates, these justifications have been extended to address principal-agent problems prevalent in intermediated relationships and portfolio management.¹⁹

¹⁴ R.H. Coase, 'The Problem of Social Cost' (1960) 3 *Journal of Law and Economics* 1.

¹⁵ E.g. North, n 6; A. Alchian and H. Demsetz, 'The Property Rights Paradigm' (1973) 33(16) *Journal of Economic History* 16.

¹⁶ See for example N. Stern, *The Economics of Climate Change* (Cambridge, Cambridge University Press, 2007).

¹⁷ W. Kula, *Measures and Men* (Princeton NJ, Princeton University Press, 1986); T.M. Porter, *Trust in Numbers: the Pursuit of Objectivity in Science and Public Life* (Princeton NJ, Princeton University Press, 1996).

¹⁸ For a standard exposition see R. Baldwin, M. Lodge, and M. Cave, *Understanding Regulation* 2nd edition (Oxford, Oxford University Press, 2010).

¹⁹ For a classic statement of the rationales of financial regulation see D. Llewellyn, *The Economic Rationale for Financial Regulation* (FSA, Occasional Paper 1, 1999). It is striking that the first occasional paper issued by the FSA's replacement, the Financial Conduct Authority, was on behavioural economics: *Applying Behavioural Economics at the Financial Conduct Authority*, Occasional Paper no 1 (London, 2013) – a nice example of the cognitive shifts in regulatory thinking prompted by the crisis.

The economic justifications for regulation have considerable diagnostic force and had significant political power in delineating the limits of acceptable state intervention in markets, notwithstanding the fact that states regulate both economic and other behaviours for quite separate reasons, related instead to risk, rights or ethical values, such as the regulation of embryology experimentation.²⁰ For now, the critical point to draw out from the market failure argument is that it assumes markets can be mended and accepts that the state may have a role to play in that mending process.

The second set of inroads into the economic model which some, though so far fewer, economists have accepted, relates to the behavioural assumptions of *homo economicus*. These challenges have come in two strands. The first was the introduction of the ‘boundedly’ rational actor. The notion was developed in the context of bureaucratic decision making, by Simon, Cyert, March, and Lindblom. It is that whilst individuals do have exogenously formed preferences, they act on the basis of incomplete information, which is processed using heuristics and ‘rules of thumb’, and moreover that they do not pursue their preferences to their optimal end, but rather they ‘satisfice’.²¹ Whilst this model of behaviour has been common in new institutional economics for some time,²² it only began to make its way into analysis of behaviour in financial markets in the 1990s, exemplified in Robert Shiller’s work on ‘herd’ behaviour within markets. His work demonstrated that individuals do not necessarily make decisions on the basis of information about the product or security they are trading, but based on information that they derive from the trading behaviour of others in the market. Contrary to the efficient markets hypothesis, trading does not lead to price discovery, but to the creation of information feedback loops and ‘cascades’ which in turn create patterns of behaviour as individuals respond to the trading decisions of others, either on the basis of information, reputation or compensation effects (i.e. that those ‘others’ are seen as having better information and so should be followed, or following them is necessary for reputational reasons, or ‘following the herd’ is rewarded by, for example, measuring performance against industry benchmarks – the criticism that Kay makes of fund managers’ remuneration).²³ As a result, ‘irrational exuberance’ (or the converse, irrational panic) is created.

²⁰ See e.g. T. Prosser, *The Regulatory Enterprise* (Oxford, Oxford University Press, 2010).

²¹ H. Simon, ‘A Behavioural Model of Rational Choice’ (1955) 69 *Quarterly Journal of Economics* 99; id., *Models of Man: Social and Rational* (New York: John Wiley and Sons, Inc., 1957); C. Lindblom, ‘The Science of Muddling Through’ (1959) 19 *Public Administration Review* 2, 79; R. Cyert and J. March, *The Behavioural Theory of the Firm* (New York: Prentice Hall, 1963).

²² North, n 6 above; O.E. Williamson, *Markets and Hierarchies: Analysis and Antitrust Implications* (New York, Free Press 1975); id., ‘The Economics of Organization: The Transaction Cost Approach’ (1981) 87 *American Journal of Sociology* 548.

²³ R. Shiller, *Market Volatility*, (Cambridge, Mass., MIT Press, 1988); id., *Irrational Exuberance* (Princeton, Princeton University Press, 2000); id., ‘From Efficient Market Theory to Behavioural Finance’ (2003) 17(1) *Journal of Economic Perspectives* 83; J. Kay, *The Kay Review of Equity Markets and Long Term Decision Making* (BIS, London, 2012), paras 5.10-5.30.

The second strand was the work of cognitive psychologists, starting in the 1960s with Kahneman and Tversky.²⁴ The insights of cognitive psychologists in how people make decisions, and in particular how people make decisions in the face of risk and uncertainty, started to enter economists' lexicon in the 1980s and 1990s,²⁵ and are now entering mainstream economic thinking on financial markets – not least that of regulators and central banks.²⁶ Cognitive psychologists have the global financial crisis to thank for widening this cognitive opening in the discipline of economics, at least as practised by some.

There is now a considerable body of empirical work by cognitive psychologists on decision-making behaviour, which explores how cognitive biases affect people's preferences as to what they want, their beliefs as to the current situation and their options, and their decision making.²⁷ Of particular relevance to understandings of the dynamics of financial markets are their insights into how individuals make decisions with respect to risk and value. At the risk of oversimplifying, people's perception of risk is affected by a multitude of factors including: the familiarity of the person with an activity or natural hazard (e.g. living next to a volcano; trading in volatile markets), the degree to which they are (or feel they are) in control; the nature of the consequences (the 'dread' factor); the distribution of the impact of the adverse event that they fear, both geographical and social (people are more averse to risks in which a number of people will be killed at once rather than those in which they are killed one at a time even though the number of deaths a year may be the same: air travel versus road travel); the 'availability heuristic' (the perceived probability of an event is affected by the ease with which relative instances are remembered or imagined – has there been a plane crash recently; have markets gone up or down recently; who has recently been convicted); whether they have exposed themselves voluntarily to the risk or not; and the perceived benefits of the activity.²⁸

In the context of financial markets, at all levels from the small retail investor to the 'titan' market makers, decisions involve both risk and perceptions of

²⁴ D. Kahneman and A. Tversky, 'Prospect Theory: An Analysis of Decision Under Risk' (1979) 47 *Econometrica*, 263-291; D. Kahneman, P. Slovic, and A. Tversky, (eds) *Judgement Under Uncertainty: Heuristics and Biases* (Cambridge, Cambridge University Press, 1982); P. Slovic, *Perceptions of Risk* (London, Earthscan Publications, 2000).

²⁵ F. Black, 'Noise' (1986) 41 *Journal of Finance*, 529-543; Shiller, n 23; for review, see A. Shleifer, *Inefficient Markets: An Introduction to Behavioral Finance* (Oxford, Oxford University Press, 1999); R. Thaler, 'The End of Behavioural Finance' (1999) 55 *Financial Analysts Journal* 6, 12-19; R. Thaler (ed), *Advances in Behavioural Finance II* (Princeton: Princeton University Press, 2003); G. Akerlof and R. Shiller, *Animal Spirits: How Human Psychology Drives the Economy and Why it Matters for Global Capitalism* (Princeton, Princeton University Press, 2009).

²⁶ E.g. FSA n 19; European Commission, *Consumer Decision-Making in Retail Investment Services: A Behavioural Economics Perspective* (Brussels, 2010); US Consumer Financial Protection Bureau Strategic Plan FY 2013-FY 2017 (available at <http://www.consumerfinance.gov/strategic-plan/>); A. Haldane, 'Patience and Finance', speech to the Oxford China Business Forum, Beijing, September 2010 (available at www.bankofengland.co.uk).

²⁷ See e.g. Slovic, n 24; C. Sunstein (ed), *Behavioural Law and Economics* (Cambridge: Cambridge University Press, 2000).

²⁸ P. Slovic, B. Fischhoff, and S. Lichtenstein, 'Facts and Fears: Understanding Perceived Risk' in Slovic, n 24; id, 'Response Mode, Framing and Information-Processing Effects in Risk Assessment' in Slovic, *ibid*.

monetary value: will I make or lose money on this trade or this investment. Understanding how individuals make decisions relating to value is therefore as important as understanding how they make decisions with respect to risk. With respect to value and evaluation, experimental work on how people make decisions shows that people are averse to suffering a loss, and that moreover, contrary to the assumptions of rational actor theory, that they do not evaluate actual losses and opportunity costs the same.²⁹ As a result, their behaviour may not be ‘rational’: they will be unwilling to give up what they have, even if what they have is due to a windfall.³⁰ People will exhibit behaviour which is more risk-preferring if they are seeking to avoid a loss than to realise a gain. Moreover, people exhibit a ‘status quo’ bias (people will evaluate options on the basis of their relation to a reference point based on their current situation and require a significant amount of justification to depart from it; for example, they hold onto investments which are falling in value even when ‘rationally’ they should sell), and make judgments of the probability of an event occurring based on an initial value for which they do not make sufficient adjustment (anchoring). It is worth emphasising that these biases afflict experts as much as they do the lay person.

The implications of these insights into individual behaviour had been starting to inform the approach to retail regulation of regulators in the UK, Australia, and Canada since the turn of the millennium.³¹ The US Consumer Financial Protection Bureau has really taken on the mantle and begun to change the content and format of information which is given to retail borrowers in the mortgage and credit card markets.³² The insights of behaviouralists have important lessons for policy makers,³³ and fit neatly with the ‘nudge’ agenda which is currently finding favour with the UK government.³⁴ They are most easily applicable in the context of disclosure regulation, where policy makers are relying on consumers or other counterparties in the market to drive optimal market outcomes. It has not yet fully registered on the policy agenda that the insights of cognitive psychology may be equally applicable to senior directors, quantitative analysts, model builders and others whose actions contribute to the constitution of financial markets. If and when it does, it could constitute a far more radical challenge to regulatory orthodoxy than has yet been contemplated.

²⁹ D. Kahneman and A. Tversky, ‘Subjective Probability: A Judgement of Representativeness’ (1972) 3 *Cognitive Psychology* 430.

³⁰ See further Sunstein, n 27, ch 8.

³¹ FSA, *Levels of Financial Capability in the UK: Results of a Baseline Survey* (London, 2006); PRI, FCAC and SEDI, *Why Financial Capability Matters: Synthesis Report on Canadians and their Money* (Ottawa, 2005); ASIC, *Hook, Line and Sinker: Who Takes the Bait in Cold Calling Scams?* (2002), available at www.asic.gov.au.

³² Consumer Financial Protection Bureau, *Annual Report* (Iowa, CFPB, 2012).

³³ E.g. FCA, n 19; E. Avgouleas, ‘The Global Financial Crisis and the Disclosure Paradigm in Financial Regulation: The Case for Reform’ (2009) 6(4) *European Company and Financial Law Review* 440; S. Schwarcz, ‘Understanding the Subprime Financial Crisis’ (2008) 60(3) *South Carolina Law Review* 549.

³⁴ R. Thaler and C. Sunstein, *Nudge* (Yale, Yale University Press, 2008); UK Cabinet Office, Behavioural Insights Team, colloquially referred to as the Nudge Unit (available at <https://www.gov.uk/government/organisations/behavioural-insights-team>).

WHAT IS A MARKET? ANSWERS FROM OTHER SOCIAL SCIENCE DISCIPLINES

As noted at the outset, these important modifications to the simple model of markets of neo-classical economics have been, or are starting to be, accepted within the discipline of economics itself. However, behavioural economics focuses on only one element of the neo-classical model, the rational actor. Moreover, it still assumes that whilst beliefs, preferences, and decision processes are the products of numerous cognitive biases, these are formed largely exogenously, as the result of particular cognitive and biological processes, and does not allow for any social processes to be involved in their formation, other than through the feedback loops that create herd behaviour. With this exception, behavioural economics leaves the asocial element of economic rationality intact.³⁵ Furthermore, the core elements of markets, and in particular the assumption that they remain distinct from the state, are not affected by the insights of behavioural economics. In contrast, the critiques and elaborations of markets that follow derive principally from economic sociology, sociological institutionalism, cultural anthropology, political economy, and the sociology of science and technology. Academic disciplines are complex constructs, however, which are internally heterogeneous even though from the outside they may appear homogenous. One should be wary therefore of attaching too much weight to labels.

Economic sociologists and others writing about markets ask a number of different questions.³⁶ Four of the most central are the following. First, what is the relationship of the economy to the rest of society? Second, what are the institutional and cultural structures that constitute the market and enable them to function? Third, what are the processes and patterns of social relationships through which markets operate? Fourth, how can we explain the behaviour of actors within markets? In particular, one of the issues which has troubled sociologists and anthropologists most, and to which each of these four questions is addressed, is whether the market is a differentiated sphere of social action, with its own logic or rationality, or whether it is simply another facet of social life.³⁷ Especially, whether the calculative pursuit of personal gain is a pervasive human trait, as for example Adam Smith argued,³⁸ or whether in other spheres of social

³⁵ See A. Lang, 'The Legal Construction of Economic Rationalities' (2013) 40(1) *Journal of Law and Society* 155.

³⁶ See e.g. N. Smelser and R. Swedberg, 'Introduction' in N. Smelser and R. Swedberg (eds), *The Handbook of Economic Sociology* (Princeton: Russell Sage, 2005); N. Fligstein, *The Architecture of Markets: An Economic Sociology of Twenty-First Capitalist Societies* (Princeton: Princeton University Press, 2001).

³⁷ E.g. K. Polanyi, *The Great Transformation* (Boston, Beacon Hill, 1944); T. Parsons and N. Smelser, *Economy and Society: A Study in the Integration of Economic and Social Theory* (New York, Free Press, 1956); P. Bourdieu, 'Principles of an Economic Anthropology' in N. Smelser and R. Swedberg, n 36 at 75 (a translation of 'Principes d'une anthropologie économique' in P. Bourdieu, *Les Structures Sociales de L'économie* (Paris, Seuil, 2000); M. Granovetter, 'Economic Institutions as Social Constructions: A Framework for Analysis' (1992) 35 *Acta Sociologica* 3.

³⁸ There is a 'certain propensity in human nature [...] to truck, barter and exchange one thing for another' A. Smith, *The Wealth of Nations* ([1776] 1979, book 1, ch. 2).

life other behaviours, of gift, reciprocity or appropriateness, are observable. Further, whether such behaviours are possible within the sphere of the market as well, or (inverting Smith's argument) whether actors within markets are socialised to be calculating.³⁹ We will turn to the issue of the 'logic' of markets below.

It is striking that in answering the question, 'what is a market' (as opposed to how do people behave in markets), economic sociologists and others have had difficulty in developing an answer.⁴⁰ The economic model of markets as locations of exchange between individuals for the pursuit of particular utilities (or values) remains the counter-foil for most critiques. These critiques address the questions above and can be grouped thematically into three: that the neo-classical economic conception of markets ignores the significance of, in turn, institutions, personal interrelationships, and calculative technologies in explaining the structure and dynamics of markets. Thus, whilst behavioural economics has gone some way to modifying the model of rational actor, that actor still remains atomistic and separate from society, and the markets in which she interacts are still conceptualised as both asocial and apolitical – distinct from any institutional structures including those of the state.

The overall counter-theme to the economic conception of markets is that actors within them are not seeking efficiency but stability, and that stability may be attained through the development of a variety of institutional structures.⁴¹ Thus, counter-posed to the homogenising economic conception of markets, in which all markets are the same, the socio-political, political economic, cultural, historical, and anthropological arguments are that markets are highly variable in their organisation and in the relationships that exist between actors within them.⁴² For example, relationships may be competitive but they may be collaborative or even collusive; parties to transactions may be only temporarily linked in exchange-based 'spot trades' or they may be linked in long term production relationships through contractual and/or social ties;⁴³ markets can be differently constituted by the institutional structures of different 'capitalisms', including different legal rules on markets for corporate control, international trade, labour laws, intellectual property laws or tax laws which favour different types of financing (debt versus equity);⁴⁴ and norms of behaviour can vary significantly between different

³⁹ P. Bourdieu, *Méditations Pascaliennes* (Paris, Le Seuil, 1997); M. Callon, 'Introduction' in M. Callon (ed) *The Laws of the Markets* (Oxford, Blackwell Publishers, 1998).

⁴⁰ G. Krippner, 'The Elusive Market: Embeddedness and the Paradigm of Sociology' (2001) 30(6) *Theory and Society* 775; R. Swedberg, 'Markets in Society' in Smelser and Swedberg (eds), n 36.

⁴¹ E.g. N. Fligstein, 'Markets as Politics: A Political-Cultural Approach to Market Institutions' (1996) 61 *American Sociological Review* 656.

⁴² For reviews see Smelser and Swedberg (eds) n 36.

⁴³ M. Granovetter, 'Economic Action and Social Structure: The Problem of Embeddedness' (1985) 91 *American Journal of Sociology* 481.

⁴⁴ E.g. P.A. Hall and D. Soskice, eds *Varieties of Capitalism. The Institutional Foundations of Comparative Advantage*, (Oxford: Oxford University Press, 2001); J. Hollingsworth and R. Boyer (eds) *Contemporary Capitalism: The Embeddedness of Institutions* (Cambridge, Cambridge University Press, 1997); Fligstein, n 36.

markets.⁴⁵ In other words, markets do not have a single character but multiple characters.

For regulators, the challenge is to know and understand the characters of the different markets, or sub-markets, which they are responsible for regulating and which may be differentiated across the instruments or products being traded. Indeed, for financial regulators it is to recognise that the moniker ‘financial markets’ itself is too homogenising: ‘financial markets’ in fact encompass multiple markets operating on different territorial scales (regional, national, global) and taking different forms. In particular, financial regulators (and some legal and social theorists) need to move from the seeing all financial markets as exchange markets,⁴⁶ in the classic paradigm, to recognising that some areas of the market take the industrial-like form of production markets, in which, for example, investment products are created, sold through distribution chains via intermediaries to ultimate buyers. It is to the exposition of the different institutional characteristics of markets that we now turn.

MARKETS ARE BASED IN INSTITUTIONAL STRUCTURES – INSTITUTIONALIST CONCEPTIONS OF MARKETS

Central to new institutionalist theories is the claim that markets are constituted by social institutions. Institutions comprise norms of behaviour, cognitive or interpretive frameworks, regulative rules, including law and decision making rules, and organisations such as firms or indeed the state.⁴⁷ Institutions also legitimise actions, and thus play an important role in rendering actions and decisions acceptable to others. There is absolutely no novelty to an institutionalist (though there is to an economist) in claiming that markets are constituted by the state, including law and the legal system.⁴⁸ In a much used (but often differently meant) phrase, markets are ‘embedded’ in institutions.⁴⁹ Institutionalists also differs from the neo-classical model of economics in that they recognise that interactions

⁴⁵ E.g. M. Abolafia, *Making Markets: Opportunism and Restraint on Wall Street* (Cambridge, Harvard University Press, 1996); id, ‘Markets as Cultures’ in M. Callon (ed), n 39.

⁴⁶ Even leading sociologists of financial markets argue that they are differentiated from production markets by ‘speculation and the seemingly endless circulation of the entities traded’: K. Knorr-Cetina and A. Preda, ‘Introduction’ in K. Knorr-Cetina and A. Preda (eds), *The Sociology of Financial Markets* (Oxford, OUP, 2005), 5.

⁴⁷ The seminal works include North, n 6; W.R. Scott, *Institutions and Organizations* (Thousand Oaks, California, Sage, 1995); W.W. Powell and P.J. DiMaggio (eds), *The New Institutionalism in Organizational Analysis*, Chicago: Chicago University Press, 1991).

⁴⁸ For example, in Pistor’s otherwise excellent analysis, the claim to novelty in observing that markets are constituted by law says more about the current state of thinking in law and economics than it does about the novelty of the observation itself: it may be new to law and economics, but not to institutionalists: K. Pistor, ‘A Legal Theory of Finance’ (2013) 41 *Journal of Comparative Economics* 315.

⁴⁹ For an instructive historical sociology of the term ‘embeddedness’ see Krippner, n 40, and on the development of the economic sociology of markets more broadly see Lang, n 35.

may not take the form of the atomistic, non-repeating spot trade form of exchange the economic conception assumes. Further, institutionalists, in common with economic sociologists, introduce the problem of uncertainty into the relationships between actors in the market place and argue that institutions develop to stabilise that uncertainty. In particular they explain why, in a situation of multiple Pareto-optimal equilibria, one policy option is chosen over another; how collective action problems are overcome; and the stability of political decision making.

Nonetheless, new institutionalism is an internally fractured set of theories, consisting of three central strands: economic, historical, and sociological. The key element that divides them is the issue of agency and structure in decision making model of behaviour that they assume.⁵⁰ New institutionalist economics assumes that actors are boundedly rational, that preferences are formed separately from social structures and could incorporate the modifications made by behavioural economics.⁵¹ Sociological new institutionalism assumes that actors' beliefs and preferences are fundamentally shaped by the cognitive and normative social structures in which they are situated and so will vary significantly from context to context.⁵² Historical new institutionalism carves a middle way through these two to argue that actors are shaped by their institutional context but can also shape it.⁵³ The question of the relative roles of agency and structure in decision making is the fundamental fissure which runs through social science. Along with many others, here I take a middle line, which is that there is a reflexive relationship between the agency and structures: each of these has an influence on individual behaviour, though those behaviours over time can shape those institutional structures in an on-going dynamic process.⁵⁴

Whatever their position on the issue of the 'over-socialised' and the 'under-socialised' actor,⁵⁵ for all institutionalist theorists the market and organisational

⁵⁰ For comparative analyses see P. Hall and R. Taylor, 'Political Science and the Three New Institutionalisms' (1996) 44(4) *Political Studies* 936-957; J. Black, 'New Institutionalism and Naturalism in Socio-Legal Analysis: Institutional Approaches to Regulatory Decision Making' (1997) 19 (1) *Law and Policy* 51.

⁵¹ For the classic exposition see North, n 6.

⁵² For classic expositions see Powell and DiMaggio (eds), n 47.

⁵³ See G. Ikenberry, 'Conclusion: An Institutional Approach to Foreign Economic Policy' in G. Ikenberry, D.A. Lake and M. Mastanduno (eds), *The State and American Foreign Economic Policy* (Ithaca, 1988); K. Thelen and S. Steinmo, 'Historical institutionalism in comparative politics', in S. Steinmo, K. Thelen, and F. Longstreth (eds), *Structuring Politics. Historical Institutionalism in Comparative Analysis*, (Cambridge, CUP, 1992).

⁵⁴ Different theories of how the duality of agency and structure is managed include bounded rationality (e.g. Simon n 21); structuration (A. Giddens, *The Constitution of Society: Outline of the Theory of Structuration* (Cambridge, Polity Press, 1984); embeddedness (Granovetter, nn 37 and 43); institutionalized reason (A. Stinchcombe, 'Reason and Rationality' (1986) 4 *Sociological Theory* 151) or institutional logics (R. Friedland and R. Alford, 'Bringing Society Back In: Symbols, Practices and Institutional Contradictions' in Powell and DiMaggio (eds) n 47; alternatively the distinction is collapsed in actor-network theory (M. Callon and B. Latour, 'Unscrewing the Big Leviathan: How Do Actors Macrostructure Reality' in K. Knorr and A. Cicourel, *Advances in Social Theory and Methodology: Toward an Integration of Micro and Macro Sociologies* (London, Routledge, 1981), 277).

⁵⁵ D. Wrong, 'The Oversocialized Conception of Man in Modern Sociology' (1961) 26 *American Sociological Review* 183.

structures which evolve over time are those which are most able to create *stability* and survive in conditions of uncertainty, even though they may not lead to economic efficiency.⁵⁶ These institutional structures may develop independently of the state, and there is a significant set of institutionalist, historical, and anthropological literature on how markets are sustained in the absence of law but in the presence of other institutional structures and social networks, ranging from historical analyses of the merchant guilds to more contemporary analyses of the diamond markets.⁵⁷ Nonetheless, whilst markets are possible in the absence of state-based institutional structures, in particular the legal system, central to institutionalist analyses of markets is that the state plays a fundamental role in producing the institutional arrangements for most markets to function, and has done so in different ways throughout history.⁵⁸

In the context of financial markets, we can see that the state provides institutional structures for their constitution and operation in two key ways. First, it provides the facilitative structures for financial products and financial transactions, through contract and property rules, governance structures for markets and associated infrastructure of the judicial system.⁵⁹ The mortgage backed securities market is an excellent example,⁶⁰ as indeed is money itself: the state authorises and backs money and financial instruments of payment which are the core of all markets, including financial markets.⁶¹ Second, the state provides regulative structures by legal rules that require markets, organisations, and behaviours to be organised in particular ways.

Indeed, paradoxically, given that financial markets are often seen as the epitome of neo-classical economics in their operation, governments play a critical role in creating or facilitating those markets at all levels. These range from legal requirements on individuals to have certain financial products, for example pensions or insurance, to creating favourable tax treatments for certain financial arrangements, for example debt issuance, or for different investment products,

⁵⁶ North, for example argues that the institutions that emerge may not be the most efficient: n 6; however rational institutionalists differ in this regard. For discussion of the variances and their relevance for regulation see Black, n 50.

⁵⁷ E.g. P. Milgrom, D. North, and B. Weingast., 'The Role of Institutions in the Revival of Trade: The Law, Merchants, Private Judges and the Champagne Fairs' in K. Basu (ed), *Readings in Political Economy* (Malden MA, Blackwell Publishing, 2002); L. Bernstein, 'Private Commercial Law in the Cotton Industry: Creating Cooperation through Rules, Norms and Institutions' (2001) 99(7) *Michigan Law Review* 1724; A. Greif, P. Milgrom, and B. Weingast, 'Coordination, Commitment, and Enforcement: The Case of the Merchant Guild' (1994) 102(4) *Journal of Political Economy* 745; S. Macaulay, 'Non-Contractual Relations in Business' (1963) 28(1) *American Sociological Review* 55; L. Bernstein in 'Opting out of the Legal System: Extralegal Contractual Relations in the Diamond Industry' (1992) 22(1) *The Journal of Legal Studies* 115-157; A. Grieff, 'Contract Enforceability and Economic Institutions in Early Trade: The Maghribi Traders' Coalition' (1993) 83(3) *American Economic Review* 525.

⁵⁸ E.g. North, n 6; Fligstein, n 36.

⁵⁹ Fligstein, n 26.

⁶⁰ N. Fligstein and A. Goldstein, 'Anatomy of the Mortgage Securitization Crisis' in M. Lounsbury and P.M. Hirsch, *Markets on Trial* (Bingley, Emerald Group Publishing, 2010).

⁶¹ See also Pistor, n 48.

such as ISAs in the UK.⁶² They include underwriting financial products, such as mortgages, or through deposit-guarantee schemes, and ultimately in underwriting financial institutions that are too big, or too interconnected to fail. The patterning of state-based institutional structures varies across financial markets: some markets, such as European equity markets, are highly structured by regulation; bond markets in contrast have historically been comparatively unregulated, and it is the state's facilitative role which dominates.

The state also distributes regulatory authority to market actors,⁶³ and in the way it organises its own regulatory structures can create differentiated products and associated markets. For example, the ongoing battle between the SEC and the CFTC in the US over the regulation of derivatives is fought in part through requirements for these legal and financial instruments to be structured in particular ways in order to fall under the jurisdiction of one regulator rather than the other.⁶⁴ The role of the state is thus critical in constituting markets, but there are three further key elements of new institutionalism in all its variances that we need to draw out in developing an enriched understanding of financial markets and its implications for regulators. These are first, the significance of the normative and cognitive frameworks of actors within markets - the 'logic' of markets; second, the role of regulative norms including law which both legitimise and provide scripts and routines for behaviour, but which also have endogenous effects; and third, the significance of organisations in markets.

NORMATIVE AND COGNITIVE FRAMEWORKS – THE 'LOGIC' OF MARKETS

As noted above, one of the longstanding questions that sociologists have addressed is whether and how markets or the economy is different from the rest of social life. For economists, this is not a particularly interesting question: people act to pursue their preferences, whether those preferences are for profit, or for social acceptance, or prestige, or some other thing they value. For sociologists, this is one of the central questions: what do people want, and why, and how to they behave in order to attain it. For some institutionalists and other sociologists of markets, the answer is that different parts of social life have their own logics, and that of the market is one of pursuit of individual self-interest for economic

⁶² Individual Savings Accounts, which can be either cash-based or invested in collective investment schemes; individuals are allowed to invest up to a specified amount each year into such products and any gains are tax free.

⁶³ J. Black, 'Decentring Regulation: Understanding the Role of Regulation and Self Regulation in a "Post-Regulatory" World' (2001) 54 *Current Legal Problems* 103-147.

⁶⁴ Proposals to merge the two regulators, proposed by Frank and Capuano in a Bill introduced in the House of Representatives in November (available at <http://democrats.financialservices.house.gov/FinancialSvcsDemMedia/file/Frank-Capuano%20SEC-CFTC%20merger%20bill.pdf>) are themselves blocked by institutional structures which currently favour different interests: the congressional agricultural committees oversee the CFTC and are likely to lose this influence if there is a merger, as the new regulator would be probably overseen by the finance committees: see e.g. 'GOP Tension Emerges over SEC-CFTC merger idea', *The Hill*, 15th November 2012, available at <http://thehill.com/blogs/on-the-money/banking-financial-institutions/268305-gop-lawmakers-push-back-against-sec-cftc-merger>.

gain.⁶⁵ In other words, they agree with the neo-classical position that behaviour in markets is (or is an attempt to be) utility maximising, but argue that this is not because actors always behave in this way, but it is due to the institutional structures of markets themselves, and indeed because of the discipline of economics itself which tells individuals that to succeed in markets they have to behave in this way.⁶⁶

Of particular relevance for regulators is these structures can be manipulable, as the discussion in the Kay report on the impact of performance metrics on fund managers' decision making illustrates, noted above.⁶⁷ However, institutional structures, particularly cognitive and normative structures, can also be deeply embedded and not easily susceptible to change. This includes regulators' own cognitive frameworks for how they perceive and understand markets to be operating: the focus of this article. Decision making within markets cannot just be explained by quirks of individual psychology, but by deeply-rooted cognitive frameworks that shape how individuals understand the world around them. This has several complex implications for regulators, but also a simple one: staffing. Breaking free from the neo-classical economic conception of markets is going to be difficult for regulators and central banks staffed predominantly by those trained in neo-classical economics.⁶⁸

Normative institutional structures are just as relevant for regulators to understand, not least in the context of the current debate on ethics in finance. Changing ethical or normative standards is not impossible – think of the impact discrimination laws have had over the last few decades – but it is difficult. Cognitive or interpretive frameworks can be just as immutable. These frameworks are relevant for those interested in regulation of markets as they will shape and affect how individuals and organisations in the markets respond to regulation: how they will interpret regulatory rules and the guidance or edicts that supervisors or inspectors give them; whether those requirements accord with their own normative standards of what is appropriate behaviour and what is not; whether they will comply because it is 'right' to do so or whether they will adopt a calculating approach, complying only when it is economically rational to do so.⁶⁹

⁶⁵ J. March and J. Olsen, 'The New Institutionalism: Organisational Factors in Political Life' (1984) 78 *American Political Science Review* 734; Stinchcombe n 54; Friedland and Alford, n 54; DiMaggio and Powell, 'Introduction' in Powell and DiMaggio, n 47; S. Zukin and P. DiMaggio, *Structures of Capital: The Social Organisation of the Economy* (New York, CUP, 1990); P. Thornton, W. Ocasio, and M. Lounsbury, *The Institutional Logics Perspective: A New Approach to Culture, Structure, and Process* (Oxford, OUP, 2012).

⁶⁶ Callon, n 39.

⁶⁷ Kay, n 23.

⁶⁸ On the influence of educational backgrounds on policy making in the IMF see J. Chweiorth, "The silent revolution: How the staff exercise informal governance over IMF lending' (2013) 8(2) *Review of International Organizations* 265.

⁶⁹ See e.g. C. Parker and V. Lehmann Neilsen (eds), *Explaining Compliance: Business Responses to Regulation* (Cheltenham: Edward Elgar, 2012).

REGULATIVE RULES AND NORMS, INCLUDING LAW - THE SOCIAL CONCEPTION OF MARKETS AS A BASIS FOR A SOCIO-LEGAL THEORY OF FINANCE

Institutional structures, including in this instance organisations, also provide regulative rules, including routines and processes, which shape and are shaped by organisational and individual behaviours. Institutional approaches enable a broader understanding and theorisation of responses to regulation than do economic conceptions of markets for two reasons. First, they have a more nuanced understanding of behaviour; second, they enable us to recognise that there is a reflexive relationship between institutions and actors, and thus see that how actors use law can itself shape how law develops.

With respect to behaviour, numerous studies have shown that how people respond to regulation is more complex than a binary ‘comply’ or ‘not comply’ response, and that their responses can be shaped by a calculative pursuit of profit, but are also shaped by their normative values (do they agree with the requirement); their interpretive framework including the view of those in their social network or with whom they interact in the market (what are their peers doing, what do those in their immediate locality expect of them, their ‘social licence’ to operate) or the nature of their interactions with the regulator (their sense of fairness and due process in that interaction), and their own capacity to comply.⁷⁰ Critically, non-legal institutions can be more powerful than legal rules in shaping behaviour. Anthropological research into the behaviour of financial traders, for example, shows that peer group pressures; fears of being ostracised, the leverage of large institutional clients, and the transparency of market dealings all affected the definition, motivations, and opportunities for abuse.⁷¹

With respect to the issue of reflexivity, it is worth drawing out some of the implications of institutional theories for understanding the relationship between law and markets, and in particular, law and financial markets, and indeed for developing a socio-legal theory of finance as a counterpoint to that of the law and economics school. Law can facilitate transactions, attempt to regulate transactions and other behaviours, and also provide constitutive concepts, influencing ideas of what is appropriate or even efficient.⁷² As Lang argues, the question that socio-legal scholars of markets should be asking is, ‘in what ways are the cognitive infrastructures of modern markets created, entrenched and mobilised through law and legal practices?’⁷³

⁷⁰ For excellent discussions see *ibid*; S. Winter and P. May, ‘Motivation for Compliance with Environmental Regulations’ (2001) 20(4) *Journal of Policy and Management* 675; N. Gunningham, R. Kagan, and D. Thornton ‘Social License and Environmental Protection: Why Businesses Go Beyond Compliance’ (2004) 29 *Law and Social Inquiry* 307; V. Braithwaite, K. Murphy, and M. Reinhart, ‘Taxation Threat, Motivational Postures and Responsive Regulation’ (2007) 29(1) *Law and Policy* 137.

⁷¹ N. Gunningham, ‘Private Ordering, Self Regulation and Futures Markets: A Comparative Study of Informal Social Control’ (1991) 13 (1) *Law and Policy* 287; M. Abolafia, *Making Markets* (Harvard: Harvard University Press, 1997).

⁷² See e.g. L. Edelman and M. Suchman, ‘The Legal Environments of Organizations’ (1997) 23 *Annual Review of Sociology* 479.

⁷³ Lang, n 35, at 170.

There may be a distinction between law's constitutive and regulative roles here (though it is important to recognise that the distinction is often blurred). Whilst legal rules may not automatically dictate behaviour in markets (if they did regulators, would be out of work), regulative rules, both non-legal and legal, play a role in providing scripts, processes and routines that influence, and are influenced by, individual behaviour. There is a divide between law and economics scholars and institutionalist scholars as to the nature of this relationship, and as to whether the focus is on analysing macro-level institutions or micro-level behaviours. In law and economics analysis, markets are viewed abstractly and at a macro-level. Law is seen as exogenous to markets. It provides an external framework, but is not integral to the ability of markets to function. Whilst law can facilitate or impede them by reducing or creating transaction costs or opportunism, it is an external factor to which markets respond as they may to other external factors.

In contrast, institutionalist scholars argue that law, as an institution, constitutes markets through its cognitive, normative, and regulative dimensions, and (we could add) the distribution of resources. Further, institutionalists argue that market structures emerge as a way of minimising uncertainty and resolving coordination problems.⁷⁴ The role of law in constituting markets and indeed in economic development is now widely recognised by law and economics scholars, though the more sophisticated analyses emphasise that it is the implementation of legal rules that has a greater effect than simply their creation.⁷⁵

Financial markets are inextricably interwoven with legal institutions as the products they trade in are legal, calculative and accounting constructs. Law does not just 'vindicate' financial instruments, as Pistor suggests,⁷⁶ it constitutes them. Financial markets' development and innovation is thus facilitated by the 'law merchants' of the legal profession,⁷⁷ who give material form to these synthetic constructs in legal opinions, standard form precedents and bespoke contracts which provide innovative ways in which to allocate rights and risks and exert a considerable influence in shaping market practice.⁷⁸ The Opinion of Robin Potts QC, which is the base on which the credit derivatives market is built, is a notorious example. Potts argued that credit derivatives were not insurance contracts, and did therefore not fall under the onerous regulatory requirements for

⁷⁴ E.g. O. Williamson, 'The Theory of the Firm as Governance Structure: From Choice to Contract' (1985) 16 *Journal of Economic Perspectives* 3, 171-195; North, n 6.

⁷⁵ See e.g. K. Pistor, M. Raiser, and G. Gelfer, 'Law and Finance in Transition Economies' (2000) 8(2) *Economics of Transition* 325.

⁷⁶ Pistor, n 48.

⁷⁷ See ISDA's response to the Law Commission consultation, April 2006 available at; see also the discussion in the Law Commission, *Insurance Contract Law Issues Paper 4* (London, 2008). As the market in credit derivatives illustrates, the wares of the law merchants can found entire markets, and often then given legal recognition by the courts (though not always, introducing a significant source of uncertainty, or legal risk). For discussion see J. Benjamin, *Financial Law* (Oxford: OUP, 2007); Lord Goff, 'Coming Together – the Future' in B. Markesinis and Clifford Chance (eds), *Millenium Lectures* (Oxford: Hart, 2000), 243-244; R.M. Goode, *Commercial Law* (Oxford: Oxford University Press, 2004), 189.

⁷⁸ Benjamin, n 77, 515; A. Riles, *Collateral Knowledge: Legal Reasoning in Global Financial Markets* (Chicago, Chicago University Press, 2011).

such contracts, enabling the market to develop outside regulatory structures. The terms of those contracts will be the terms, for the most part, on which markets operate. They create the products that set the terms on which risk is being distributed, and the terms on which it will crystallise.

As such, law provides both flexibility and reduces uncertainty by enforcing commitments, but in so doing, it can, as Pistor observes, create rigidities, and thus increase systemic risk in markets by requiring legal obligations to be observed in situations when their observance will have systemic effects. So in managing instability, law can itself create instability: what Pistor et al term the 'law-finance paradox'.⁷⁹ Taking that point further, it is worth noting that the paradox can have systemic effects where contracts are standardised across the markets, as homogenisation itself creates risks. As a result, the terms of contracts, such as the triggers in co-cos for debt instruments to convert to equity instruments, or what constitutes a 'credit event' for a derivative, and the judicial and legal-market infrastructures for determining that decision (notably ISDA's Determinations Committee) are of critical significance to understanding systemic risk within the markets.⁸⁰ Regulators ignore them at their peril.

It is through a detailed understanding of the dynamics and products of the legal system that socio-legal analysis can add to institutionalist theorists' assumptions about how law functions as a facilitative and regulative structure within markets. This is particularly relevant in financial markets, where the products traded are legal constructions, and have no independent existence outside of their contractual form. A derivative or any other security does not exist separately from the legal instrument that creates it.

In addition, institutional theorists can miss the nuances of the internal dynamics of law, its fractured nature, and how market actors use law, in the form of legal instruments, to avoid law, in the form of legal restrictions. Avoidance and gaming strategies can lead to the development of particular financial instruments, and indeed to entire markets. For example, it is well documented that the Eurobond market (in which corporate bonds issued in a foreign currency, initially US dollars, are traded outside that country) developed in London largely to avoid US interest equalisation tax introduced in 1963 which imposed a tax penalty on US investors buying foreign bonds, and to avoid US restrictions on overseas direct investments by US corporations, also introduced in the 1960s, which forced US foreign subsidiaries to borrow abroad.⁸¹ Standby letters of credit developed in the US because of prohibitions on national banking associations from issuing bonds

⁷⁹ Pistor, n 48; for a further example see E. Micheler, 'Intermediated Securities and Legal Certainty', available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2261824.

⁸⁰ On ISDA see D. Awrey, 'Toward a supply-side theory of financial innovation' (2013) 41(2) *Journal Comparative Economics* 401; J. Golden, 'The Courts, the Financial Crisis and Systemic Risk' (2009) 4 Suppl 1 *Capital Markets Law Journal*, S141-S149.

⁸¹ P. Wood, *International Loans, Bonds and Securities Regulation* (London: Sweet and Maxwell, 1995), 10; Benjamin, n 77.

by way of guarantees.⁸² Several forms of financial derivatives also owe their origins to avoidance strategies. For example, swaps were originally developed from the back-to-back loans that were devised to avoid exchange controls in the 1970s.⁸³ Money market mutual funds (MMFs) which proved to be so destabilising in the US in the crisis, were developed as a result of Regulation Q in the 1970s, which limited the interest rate US banks could pay depositors. As the funds grew, the fund managers lobbied for and gained the regulatory approval to make the funds akin to deposits by allowing them to price their shares on the basis of net asset value, and so to pay out at par.⁸⁴ It was the failure of one of those funds, Reserve Primary, to pay out at par which triggered a run on MMFs in the crisis, enhancing the destabilisation in the markets. These legal products of regulation are now causing regulators considerable concern.⁸⁵

Further, and notoriously, capital adequacy rules introduced in 1988 are widely credited as being responsible for the development of the asset-backed securities market.⁸⁶ The production of financial instruments to avoid regulatory requirements was observed by regulators as early as 1992,⁸⁷ a fact which itself is a good illustration of ‘regulatory lag’ (the time difference between regulators becoming aware of an issue and actually acting to address it). Assets were bundled to create securities instruments that had lower risk weights than their economic risk required, thus gaming the rules on risk weighting assets. In a further gaming move, the new securities were moved from the banking book to the trading book, altering their treatment under accounting and capital rules. These securities could be developed and traded off-balance sheet, and so did not have to figure in the calculation of the amount of capital that a bank needed to set aside to offset its risks.⁸⁸ Banks also set up separate corporate structures to house their derivative assets, ensuring that credit lines advanced to them fell short of the one-year rule which would have required their disclosure.⁸⁹ Such gaming strategies thus have considerable aggregative impacts: it was the development, structure, and operation of these markets which led directly to the financial crisis of 2007-9.

On the other hand, states themselves are players in the markets, notably the sovereign debt markets. Their power to unilaterally determine the rules, however, is bounded by market actors: sovereigns cannot unilaterally determine the rules of those markets, for example by passing laws that relieve them of their obligations

⁸² R. Jack, A. Malek, and D. Quest, *Documentary Credits* (London: Butterworths, 3rd ed, 2001), 342, cited in Benjamin, n 77, 506.

⁸³ Wood, n 81.

⁸⁴ E. Gerding, ‘The Shadow Banking System and its Legal Origins’ (2012) available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1990816.

⁸⁵ E.g. Financial Stability Board, *Shadow Banking: Scoping the Issues* (Basle, FSB, 2011); FSB, *Strengthening Oversight and Regulation of Shadow Banking: An Integrated Overview of Policy Recommendations - Consultative Document* (Basle, FSB, 2012).

⁸⁶ E.g. FSB, n 85 (2011); V. Acharya and M. Richardson, ‘Causes of the Financial Crisis’ (2009) 21 (2&3) *Critical Review* 21 195.

⁸⁷ Basle Committee on Banking Supervision (BCBS), *Asset Transfers and Securitization* (Basle (BIS, 1992).

⁸⁸ See G. Tett, *Fools Gold* (London: Free Press, 2009) for discussion.

⁸⁹ *ibid.*

to repay, otherwise market actors will not purchase their debt, as Argentina has found out.⁹⁰ However, the dual role of the state as participant and regulator can lead to conflicts of interest, which in turn can be manifested in institutional clashes between executive governments and regulatory bodies.

As an aside, it is worth noting that a key outcome of the complex intertwining of states in financial markets can be the politicisation of prudential supervision, notwithstanding the formal independence of the prudential supervisor.⁹¹ The politicisation of supervision has been most obvious in the distortion of stress tests used to assess capital shortfalls of banks, as in the case of the European Banking Authority's stress tests in 2010, which were widely discredited by observers in the market. The politicisation of prudential supervision is particularly acute in post-crisis, because of the widespread bail-outs by governments of their banking systems, and thus the explicit recognition of a political fact which had hitherto been implicit, which is that governments and their taxpayers are ultimately the guarantors of the banking system. Capital shortfalls indicate the potential levels of capital injection that may be required, but in the post bail-out era, the assumption is that the injection will have to come from the state, as ultimate backstop to the banking system. The government of any state therefore has an interest in ensuring that any capital shortfall calculated by its prudential supervisors does not exceed the state's ability to finance it.

So the endogeneity and 'mutual constitutiveness' of states, law, and markets, how law is interpreted, constructed, and used within markets, including the use of law to create legal products that by-pass other laws, and the endogenous systemic effects of law itself - these are not just matters of abstract theory, they are practical realities which can be of considerable significance to financial regulators.

ORGANISATIONS

Finally, one of the key elements of sociological and institutionalist conceptions of market is that they are comprised not just of individuals but of organisations. Understanding the organisational dimension to regulation is critical to understanding both the dynamics of markets, and the dynamics of a regulatory system, for much of regulatory governance consists of one organisation or set of organisations attempting to act on another, much larger set of organisations in order to attain a particular set of goals, for example to manage risk, correct markets, or pursue ethical ends.⁹² For those at either end of the agency-structure spectrum, organisations are viewed as synonymous with individuals, in that they are seen as homogenous units acting within an environment, and their internal dynamics are either ignored or assumed to flow from the decisions of their

⁹⁰ A. Gelpern and M. Gulati, 'The Wonder Clause' 41(2) *Journal Comparative Economics* 367.

⁹¹ Thus providing a counter-point to highly formalistic assessments of independence, for example F. Gilardi, *Delegation in the Regulatory State: Independent Regulatory Agencies in Western Europe* (Edward Elgar, 2008).

⁹² J. Black, 'Paradoxes and Failures: 'New Governance' Techniques and the Financial Crisis' (2012) 75(6) *Modern Law Review* 1038.

managers.⁹³ However, theorists who sit in the middle of the spectrum go inside organisations to analyse how those internal dynamics affect how the organisation responds to its environment or its organisational ‘field’, including how it responds to risk.⁹⁴

We know from the significant body of institutionalist work on organisations⁹⁵ and the literature on business responses to regulation⁹⁶ that any analysis of organisational behaviour has to be multi-level, and that behaviour, including responses to regulation, are shaped by the complex interplay of factors at the individual level (incentive structures and interests of key individuals); the level of internal organisational systems, processes and cultures; and at the macro-level: not only the organisation’s immediate field but also the deeper normative and cognitive environment.⁹⁷

The financial crisis provides an excellent illustration of how organisational dynamics affect markets, and why it is critical for regulators to understand them.⁹⁸ The relevance includes understanding the dynamics of innovation within markets and how organisations’ business strategies are shaped by those in their organisational field, and thus how new products or trading strategies can spread across markets.⁹⁹ At the micro-level of actors, it was clear from the crisis that the incentives of key actors: banks, credit-rating agencies, and indeed investors, were fundamentally misaligned. At the level of organisational infrastructure, it became clear that internal systems, processes, and cultures were inadequate and / or inappropriate, and that there were significant weaknesses in the regulatory capacity of both regulators and firms.

Regulatory capacity is a composite notion comprising both resources and disposition. Key resources include information, expertise, legitimacy and authority, strategic position and organisational capacity. Disposition is the willingness and ability to use these resources to pursue regulatory goals.¹⁰⁰ Even if

⁹³ For discussion see e.g. M. Reed, ‘The Agency/Structure Dilemma in Organization Theory: Open Doors and Brick Walls’ in H. Tsoukas and C. Knudsen, *The Oxford Handbook of Organization Theory* (Oxford, OUP, 2003).

⁹⁴ E.g. Scott, n 47; Fligstein n 36; B. Hutter and M. Power, *Organisational Encounters with Risk* (Oxford, OUP, 2010).

⁹⁵ See Scott, n 47 especially pp 195-197; C. Oliver, ‘Strategic Responses to Organizational Processes’ (1991) 16 *Academy of Management Review* 145.

⁹⁶ See e.g. V. Braithwaite (ed), *Taxing Democracy: Understanding Tax Avoidance and Evasion* (Aldershot: Ashgate, 2003); Gunningham, Kagan, and Thornton, n 70; B. Cashore, ‘Legitimacy and the Privatization of Environmental Governance: How Non-State Market Driven (NSDM) Governance Systems Gain Rule Making Authority’ (2002) 15(4) *Governance* 503-529; Parker and Nielsen, n 69.

⁹⁷ Scott, n 47.

⁹⁸ For discussion see Black, n 92.

⁹⁹ For review of theories of innovation see J. Black, ‘Tomorrow’s Worlds: A Framework for Understanding Regulatory Innovation’ in J. Black, M. Lodge, and M. Thatcher (eds), *Regulatory Innovation: A Comparative Analysis* (Cheltenham, Edward Elgar, 2005); in the context of the crisis see J.E. Pozner, M.K. Stummier and P.M. Hirsch, ‘Terminal Isomorphism and the Self-Destructive Potential of Success: Lessons from Subprime Mortgage Origination and Securitization’ in Lounsbury and Hirsch, n 60.

¹⁰⁰ There are slightly different views on what constitutes regulatory capacity: those identified here are expanded in J. Black, ‘Enrolling Actors in Regulatory Processes: Examples from UK Financial Services Regulation’ [2003] *Public Law* 62; an alternative is Hood’s NATO: ‘nodality, authority, treasure and

they had the resources, the crisis revealed that firms did not have the disposition required for management-based regulation to be robust. Moreover, despite their extensive financial resources, financial institutions did not have adequate IT and other management systems to gather and analyse data on their own operations, and information was filtered as it moved up through the organisation leaving those at board level with only highly aggregated information that did not give a full picture of the risk exposures of the firm¹⁰¹ (though this may be a convenient strategy for those at the top to manage their own liability). There were thus fundamental disconnections between different levels and parts of the organisations. Bringing together relevant knowledge from different parts of the organisation, critically on macro and micro-level risks, was organisationally cumbersome, both for firms and for regulators.¹⁰² Internally, control functions were far less powerful than front office functions in both firms and regulators, notwithstanding the formal distribution of powers in both.¹⁰³ Furthermore, the governing boards of both financial institutions, and indeed the UK regulator, were distracted by other issues.¹⁰⁴ Finally, critical failings occurred at the interface of the regulatory organisation with the organisations that it was meant to be regulating, or rather, that it is relying on to perform that regulation, with regulators not knowing or understanding enough about the organisations they were regulating, leading to significant asymmetries in informational power and expertise. As a result, financial institutions were able to disguise their true financial position from regulators and governments, as recent revelations of telephone conversations between senior directors of Anglo-Irish Bank indicate.¹⁰⁵ Regulators were not so much captured as conned and cowed.

In summary, therefore, institutionalist theories are thus of significant value in developing a social conception of markets, but socio-legal analysis can add to institutionalism and provide a basis for the development of a socio-legal theory of finance, emphasising the constitutive and endogenous effects that institutional structures have on behaviour and decisions within markets. This includes the productive and destructive effects that interaction between different rules can have on the management of risk, as in the case of the interaction of mark to market

organization', developed to describe tools of government: C. Hood, *The Tools of Government* (London: Macmillan, 1983); C. Hood and H. Margetts, *The Tools of Government in the Digital Age* (London, Palgrave Macmillan, 2007).

¹⁰¹ E.g. UBS, *Shareholder Report on UBS's Write-Downs. Report to Swiss Federal Banking Commission* (Geneva, UBS, 2009).

¹⁰² FSA, n 1; OECD, *Corporate Governance and the Financial Crisis: Key Findings and Main Messages* (Paris, OECD, 2009).

¹⁰³ Senior Supervisors Group, *Risk Management Lessons from the Global Banking Crisis of 2008* (Basle, FSB, 2009).

¹⁰⁴ FSA n 1; UBS, n 101.

¹⁰⁵ 'Kenny Faces Irish Bank Inquiry as Anglo Bank Tapes Revealed' Bloomberg, 24 June 2013, available at <http://www.bloomberg.com/news/2013-06-24/kenny-faces-calls-for-banking-inquiry-as-anglo-tapes-released.html> (referring to tapes of conversation between the Anglo-Irish Bank head of capital markets to the head of the consumer division agreeing that the bank would not reveal its true position at first, but ask only for Euro 7bn, saying 'You get them [the Irish government] to write a big cheque and they have to keep, they have to support their money'.

rules with risk management strategies required by private contracts and regulatory rules. A socio-legal theory of finance also highlights the strategic use of law to facilitate avoidance behaviour, for paradoxically the facilitative structures of law can be used to game the regulative structures through using contract and property law, or accounting rules.

However institutionalist theories of markets have been criticised for failing to take individuals seriously, in the sense of failing to see the role that social relationships between individuals have in creating different market structures, and indeed in internal organisational dynamics. It is to social networks that we now turn.

MARKETS ARE COMPRISED OF SOCIAL NETWORKS

Social network analyses of markets are addressed primarily to the question: what accounts for the different structures and patterns of organisation of markets. The answer is social relationships. In Granovetter's seminal article, individuals in markets are linked together, 'embedded', in a series of personal inter-relationships of different degrees of proximity which shape what is that they want, and how they behave in achieving those goals.¹⁰⁶ Terminology can be confusing here: whereas Polyani's 'embeddedness' refers to actors' situation in institutional structures, Granovetter's 'embeddedness' refers to their situation in social networks.¹⁰⁷

Granovetter's original thesis was focused on the question of how order is produced in markets, and in particular how trust is developed and opportunism prevented.¹⁰⁸ Granovetter criticised the 'under-socialised' conception of individuals prevalent in economic theory, which argued that opportunism was in effect 'ironed out' by the multiple transactions of the market, and the 'over-socialised' conception dominant in sociological analyses, which argued that trust would develop in the process of individuals acting in accordance with an overarching set of normative values. He argued that both approaches fell into the same trap, which was to assume that individuals interacting in markets were atomistic – independent and separate from any particular set of *social* inter-relationships. Instead, he argued, '[a]ctors do not behave or decide as atoms outside a social context, nor do they adhere slavishly to a script written for them

¹⁰⁶ Granovetter, n 43; see also n 37 and M. Granovetter, 'The Old and the New Old Economic Sociology: A History and an Agenda' in R. Friedland and A.F. Robertson, *Beyond the Marketplace: Rethinking Economy and Society* (New York, Aldine de Gruyter, 1990).

¹⁰⁷ See Krippner, n 40. Though note that Granovetter also argued that some networks could become so entrenched, or 'congealed' that they become taken for granted, i.e. they became institutions: Granovetter n 37.

¹⁰⁸ Granovetter's 1985 article was aimed in particular at Williamson's thesis that individuals decide to embody their transactions within firms rather than markets in order to deal with problems of transaction costs and opportunism: Williamson, n 22 and n 74.

by the particular intersection of social categories that they happen to occupy. Their attempts at purposive action are instead embedded concrete, ongoing systems of social relations'.¹⁰⁹ Through their embeddedness in a network of social relations, 'continuing economic relations often become overlaid with social content that carries strong expectations of trust and abstention from opportunism'.¹¹⁰ Markets which are sustained through social structures and family ties, such as the diamond markets, provide excellent examples of the force of these inter-relationships.¹¹¹ Cranston's work on the history of futures markets, and Collins' work on 'club markets' illustrate the significance of social interrelationships in the early development of futures and equity markets.¹¹² So, conversely, do the dynamics of bail-outs: the deal struck by the socially connected members of the Institute of International Finance as to the haircut that bondholders would take on Greek sovereign debt in 2012, for example, was upset by 'outsiders', or 'holdout creditors', in this case hedge funds, who refused to accept the deal.¹¹³

The theory has two caveats: first, that networks of inter-personal relations may be highly variable in their density in different areas of economic life, and so distrust and opportunism may still prevail. Second, that whilst networks are necessary for trust to develop, they are not sufficient, and indeed if abused may provide the occasion for greater degrees of conflict and malfeasance than would be possible in their absence.¹¹⁴

Granovetter's work has been particularly influential in providing the basis for the development of network theories of markets. Paradoxically, in anthropomorphising markets, and attributing actions to the abstraction of 'a market', neo-classical economic conceptions, as macro-level analyses, assume away their social nature. In contrast, social network analysis can be used to explain the multitude of different types of economic relationships that exist other than atomistic spot markets and hierarchically organised firms, particularly of industrial markets of production. Academics have traced the role of social interactions in the construction and dynamics of industries ranging from clothing manufacturers in Italy to the electricity industry in the US.¹¹⁵ Social network theory has also been used to show how information is 'discovered' through social networks, not merely

¹⁰⁹ Granovetter n 43, 487.

¹¹⁰ Ibid, 490.

¹¹¹ See references at n 57.

¹¹² R. Cranston, 'Law Through Practice: London and Liverpool Commodity Markets c.1820-1975' (2007) LSE Law Department Working Paper, at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1021952; H. Collins, *Regulating Contracts* (Oxford: Oxford University Press, 1999).

¹¹³ Prompting the IMF to open consultation on future restructurings: IMF, *Sovereign Debt Restructuring—Recent Developments and Implications for the Fund's Legal and Policy Framework* (Washington, IMF, 2013); 'Wins by hedge funds prompt debate on sovereign restructuring' FT.com, 22 May 2013. On the use of collective action clauses to address collective action problems in sovereign debt restructurings see Gelpert and Gulati, n 90.

¹¹⁴ Granovetter n 43.

¹¹⁵ See e.g. B. Uzzi, 'Social structure and competition in interfirm networks: The paradox of embeddedness' (1997) 42 *Administrative Science Quarterly* 35; M-L. Djelic and A. Ainamo, 'The Coevolution of New Organizational Forms in the Fashion Industry: A Historical and Comparative Study of France, Italy, and the United States' (1999) 10(5) *Organization Science* 622-637; L. Smith-Doerr and W. Powell, 'Networks and Economic Life' in Smelser and Swedberg, n 36.

‘observed’ by market participants, and how decisions in financial markets, for example on lending, trading, and investment strategies are highly influenced by inter-personal social networks. For example, Cohen et al found that mutual fund managers were more likely to invest more heavily in funds run by managers with the same educational backgrounds as themselves, and for those funds to outperform their other investments, arguing that the comparative over-performance is generated by information flows through the social network.¹¹⁶ (It is here that social network theory comes closest to both sociological institutionalist theories of imitation (that actors imitate the behaviour of others in situations of uncertainty) and behavioural economics’ ‘herding’ theories, discussed above, and that isomorphism and herding theories become closest to each other.)¹¹⁷ Indeed, it appears from the crisis that whether or not an actor was part of a social network was highly relevant to whether they fuelled the ‘irrational exuberance’ or betted against it. It is notable from Michael Lewis’s account that those who started betting against the mortgage backed securities market in the period leading up to the crisis were largely social mavericks, who were not integrated into the mainstream socio-professional networks, and who were seen as outsiders both by themselves and others.¹¹⁸

Social network theory has been criticised for over-emphasising the role of interpersonal networks in constituting markets, and in ‘de-institutionalising’ actors (which is why the theory comes closest to that of behavioural economics). Sociological institutionalists criticise social network theory for assuming that individuals arrive in social networks with their perceptions and goals as ‘unformed’ by their institutional environment as their economic counterparts,¹¹⁹ and ignores the role of the state in creating institutional structures in which the interactions occur.¹²⁰ The criticism is perhaps not so damning, however; it is perfectly possible for social network analysis to incorporate these elements, but their focus is instead elsewhere. Indeed, in response, some social network theorists draw on Bourdieu to argue that actors arrive in social networks in the possession of varying degrees of power and resources in the form of social, cultural, symbolic, and economic capital,¹²¹ and can exploit their position in networks to expand on these, for example by occupying ‘structural holes’ and acting as arbitrageurs between actors who are otherwise unconnected to one another.¹²²

¹¹⁶ L. Cohen, A. Frazzini, and C. Malloy, ‘The Small World of Investing: Board Connections and Mutual Fund Returns’ (2008) 116(5) *Journal Political Economy* 951.

¹¹⁷ Shiller, n 14 ; H. Hong, J. Kubie, and J. Stein, ‘They Neighbour’s Portfolio: Word-of-mouth effects in the holdings and trade of money’ (2005) 60(6) *Journal of Finance* 2801; N. Choi and R. Sias, ‘Institutional Industry Herding’ (2009) 94(3) *Journal of Financial Economics* 469; H. Rao, H. Greve, and G. Davis, ‘Fool’s Gold: Social Proof in the Initiation and Abandonment of Coverage by Wall Street Analysts’ (2001) 46(3) *Administrative Science Quarterly* 502.

¹¹⁸ M. Lewis, *The Big Short: Inside the Doomsday Machine* (W.W. Norton, 2010).

¹¹⁹ P. Di Maggio, ‘Culture and Economy’ in N.J. Smelser and R. Swedberg, *The Handbook of Economic Sociology* 1st edition (Princeton: Princeton University Press, 1994).

¹²⁰ Fligstein, n 36.

¹²¹ Bourdieu, n 36; Granovetter, n 43.

¹²² R. Burt, *Structural Holes* (Cambridge, Harvard University Press, 1992).

It may be that at this point the two theories are not as distinct as some of their protagonists may insist, therefore, and that with some theoretical spadework, social network theory and institutionalism could be reconcilable. That task will not be undertaken here, but instead it is suggested that the particular value of social network theory in the context of financial regulation is fourfold.

First, social network theory draws attention to the role of social networks in *legitimising* information, *creating* knowledge, and thus forming the basis of trading decisions – in contrast to the neo-classical economic assumptions that information is disseminated within markets through mechanisms only of observation, even as modified by the insights of behavioural economics on the role of feedback loops and information cascades.

Second, social network theory also emphasises the role of social networks in developing *trust* between actors in markets and developing confidence.¹²³ This goes beyond the reputation effects of feedback loops, noted in Shiller's theory, in which some rely on the trading decisions of others for reputational reasons. In particular, the role of trust is critical in financial markets, perhaps more so than in other markets, due to the fact that financial markets are based on debt, or credit, and deal in risk. Estimations of credit and of risk require faith, confidence, and trust, yet to the economic conception of markets these concepts are irrelevant. But we have only to think on a macro-scale of the role of confidence in sustaining credit and investment markets to see its relevance, and to look at the drying up of liquidity in the credit crisis to see what happens when trust and confidence disappears.¹²⁴

On a micro-scale, the role of trust in social network theory explains how fraudsters such as Madoff operate, by infiltrating social groups to gain trust with a view to then abusing that trust on a massive scale. Indeed, in some instances securities regulators have identified systematic patterns of abuse of trust being perpetrated by fraudsters penetrating church groups and who have then developed regulatory strategies of working with such groups to prevent members of the group being defrauded.¹²⁵ Further, as Granovetter observes, fraudulent schemes of bid-rigging, kickbacks or, we could add insider dealing or the giving of false information to those compiling indices such as Libor, are often best performed through groups of individuals and require levels of internal trust that are predicated on existing social relationships.¹²⁶ Whilst individual, atomistic

¹²³ A. Etzioni, *The Moral Dimension: Towards a New Economics* (New York, The Free Press, 1988).

¹²⁴ For an interesting analysis which focuses not so much on social networks but on the role of proxies in decision making and their implications for the development of confidence in markets see R. Swedberg, 'The Structure of Confidence and the Collapse of Lehman Brothers' in Lounsbury and Hirsch, n 60.

¹²⁵ For discussion see J. Black, *Involving Consumers in Securities Regulation*, prepared for the Taskforce to Modernize Securities Regulation in Canada, (Toronto, IDA Taskforce, 2006) available at <http://www.lse.ac.uk/collections/law/staff/%20publications/%20full/%20text/black/Involving%20Consumers%20in%20Securities%20Regulation%20-%20Taskforce%20report.pdf>. Shiller argues that Ponzi schemes are examples of feedback loops, which is often true (people see others making money and want to do so too), but that explanation understates the role of trust that investors place in certain individuals in their decisions to invest.

¹²⁶ Think of the now infamous 'Bollinger' email, see e.g. 'Bollinger and 'big boy': Suspicious Barclays Libor email extracts revealed' *The Independent*, 27 June 2012.

malfeasance is possible (the ‘rogue trader’), far worse harm can be inflicted on others by those acting in concert.

Third, network analysis focuses on the social systems of production, which are excluded from the neo-classical economic conception of markets, which in focusing only on exchange downplays the role of production.¹²⁷ In the context of financial markets, paradoxically neo-classical economics downplayed the role of intermediaries, of banks themselves, in markets, assuming that they were simply conduits for the efficient allocation of resources between those who had money and those who needed it.¹²⁸ As a result, regulators and others can fail to see how risk is not just being exchanged in a one-off transaction but is being distributed or concentrated through different links in a production and distribution chain. Whilst some areas of financial markets are exchange-based, others involve the construction of products, using multiple actors, through a chain from production through distribution, possibly including warehousing (in special purpose vehicles) third party validation (a credit rating) or additional insurance product (a credit default swap) to the ultimate investor. The construction of packaged products for the retail markets, or of structured products for the wholesale market which are then rolled out to the markets, is in many respects akin to an industrial production process. In other areas, such as securities intermediation,¹²⁹ or the shadow banking world of non-bank credit intermediation, for example in the repo markets, actors are linked in a complex contractual daisy chain.¹³⁰ Social network theory can help to draw attention to the multi-variate character of the links that exist between actors in a market, and thus to the notion of a market *system*, discussed below.

Fourth, social network theory is relevant for understanding the role of social networks in the internal dynamics of organisations, as such networks can subvert the hierarchical governance arrangements which neo-institutionalist economists assume will automatically constrain opportunism.¹³¹ Instead, social relations rather than authority, or the ‘soft underbelly of friendship cliques’¹³² are responsible for producing order within firms. It thus links to sociological institutional analysis of organisations, discussed above. There is nothing new in pointing out that organisations do not behave in the way their formal rules and organisational charts may suggest. As Granovetter observes, those who assume that they do are ‘sociological babes in the woods’.¹³³ Again, however, the particular value is the attention to the role of social relations within organisations

¹²⁷ For review see J. Hollingsworth and R. Boyer, ‘Coordination of Economic Actors and Social Systems of Production’ in Hollingsworth and Boyer, n 44.

¹²⁸ FSA, n 1.

¹²⁹ Micheler, n 79.

¹³⁰ Z. Poszar, T. Adrian, A. Ashcraft, and H. Boesky, *Shadow Banking*, Federal Reserve Bank of New York, Staff Reports no. 458, 2010, revised 2012; FSB, n 85 (2011).

¹³¹ Williamson, n 22.

¹³² Smith-Doerr and Powell, n 115, 384; Granovetter n 43.

¹³³ Granovetter n 43, 502.

in explaining their dynamics, which in turn impact on how that organisation acts within the market, and how it responds to regulation.

However, we also need to add to social network analysis by drawing attention to power relations, which we need to recognise as being relevant not only to the dynamics of institutional structures,¹³⁴ but to social networks too. Social interactions and power relations can subvert organisational structures and processes put in place to manage conflicts of interest, for example¹³⁵ to manage risk¹³⁶ or to prevent malfeasance, such as insider dealing. Social interactions can also be the mechanisms by which normative and cognitive frameworks are formed both within and outside organisations, creating epistemic communities of experts whose ideas can exert a strong influence on behaviour within organisations, within markets, and on policy makers.¹³⁷ This can have the effect of creating closed technical communities, but conversely, it suggests that social relations could be leveraged to achieve positive effects within organisations, perhaps even, if we are very optimistic, ethical standards.

MARKETS AS CALCULATIVE DEVICES- THE TECHNOLOGIES OF MARKETS

Thus so far we have got to the stage of understanding markets not as abstracted entities but as locations – market places - where encounters between those engaged in exchange are organised and structured by social institutions and social networks, which in turn they shape. Further, refinements to institutional theory allow individuals who are encountering each other in market places to exhibit a particular logic, that of pursuit of profit. What is still missing from this conception of markets is an understanding of the mechanisms of markets, and not least the technologies by which the products that are exchanged are rendered commensurable or fungible, and how their value or price is calculated, and how they are exchanged and circulated.

Here the work of the sociology of science and technology studies (STS) is significant. Michel Callon is one of the founders of this line of theory, and there is a rapidly growing literature which analyses financial markets from this perspective.¹³⁸ In this body of literature, markets are coordinative devices in which

¹³⁴ Fligstein, n 36.

¹³⁵ See also M. Hayward and W. Boeker, 'Power and Conflicts of Interest in Professional Firms: Evidence from Investment Banking' (1998) 43 *Administrative Science Quarterly* 1.

¹³⁶ UBS Report, n 101.

¹³⁷ P. Haas, 'Introduction: Epistemic Communities and International Policy Co-ordination' (1992) 46 *International Organization* 1; Tett, n 88; A.R. Sorkin, *Too Big to Fail: Inside the Battle to Save Wall Street* (London, Penguin Books, 2009).

¹³⁸ Callon, n 39; M. Callon, Y. Millo, and F. Muniesa (eds) *Market Devices* (Oxford, Blackwell Publishing, 2007); Knorr-Cetina and Preda (eds), n 46; A. Preda, 'STS and Social Studies of Finance' in E Hackett, O. Amsterdamska, M. Lynch, and J. Wacjman, *The Handbook of Science and Technology Studies* 3rd edition (Harvard, MIT Press, 2008).

individuals pursue their own interests and to this end perform economic calculations (they are thus ‘calculating agents’ in a dual sense of the term). Individuals have divergent interests, and they reconcile this divergence through agreeing a price for an exchange, which is agreed in terms of money.¹³⁹ Money thus renders the things being exchanged commensurable and fungible.

STS is a complex group of theories which are continually being developed and redefined, but the essential elements which are relevant for the discussion here are fivefold.¹⁴⁰ First, that markets are particular modes of coordination which may be differently organised. Here the connection with institutionalist theory is clear, and enables a bridge to be built between the two theories. Second, that within markets individuals have differential power arising from their social, cultural, symbolic and economic capital: here the use by both Callon and Granovetter of Bourdieu’s theory of capital provides a bridge with social network analysis. Third, that within markets individuals are ‘formatted’ by the socio-cultural context of the market to exhibit a particular rationality, that of strategic calculation to maximise one’s own gain. Again, the links with anthropology and theories of institutionalist logics are clear and can be developed, though that task too will be left for another time.

Instead, attention will focus on the last fourth and fifth elements. The fourth element is that of calculative technologies. Departing from institutionalist and network analysis, Callon identifies that in order for things to be exchanged for a price, the ‘thing’ has to be defined and separated from other ‘things’ to which it is attached, and technologies of calculation have to be employed to arrive at a price. Prices, and price data, emerge from a web of interactions involving social actors, technological devices and technological artefacts. It is both the existence and dynamics of this phenomenon which link the theory to that of the sociology of science and technology studies. The fifth and final element is that of performativity: that markets themselves then perform those calculations, in the sense of acting them out, with the result that the calculative devices used to address uncertainty become self-fulfilling. These last two elements mark the most novel aspects of the theory, and it is therefore those on which the rest of this section will focus.

CALCULATIVE TECHNOLOGIES

The key resonance for financial regulators, and those in financial markets, and indeed for any debate which involves using markets to deliver public interest goals such as the environmental context, is the focus the theory places on processes of

¹³⁹ Callon, n 39; Preda, n 138; M. Callon and F. Muniesa, ‘Economic Markets as Calculative Collective Devices’ (2005) 26(8) *Organization Studies* 1229.

¹⁴⁰ Callon and Muniesa, n 139. For a discussion of the relevance of Callon and Muniesa’s work in particular in the development of an economic sociology of law, see Lang, n 35.

calculation.¹⁴¹ Rendering something calculable involves a number of steps. The ‘thing’ has to be identified and separated from its context. It then has to be measured or counted, and a value has to be assigned to it. The calculation of the price of the product or bundle of rights which are the subject of exchange is thus not performed purely through the enactment of impersonal and disembedded laws of supply and demand, as pure economic analyses would suggest, nor through mere exercises of judgement, as pure sociological analyses might suggest, however, but in accordance with the logic and conventions of calculative processes.¹⁴²

It is worth spending a brief time considering in turn each of the steps involved in rendering something calculable, for calculations are at the heart of financial markets and their regulation. How to measure asset price ‘bubbles’ so as to be able to manage them; what calculative tools to use to manage financial stability on a micro and macro-level: loan to value ratios; leverage ratios; liquidity coverage ratios; net stable funding ratios; how to calculate the risk-weighting of assets for capital ratios; by what legal and accounting devices capital is itself created, and indeed, how to measure financial stability itself: these are all central to the post-crisis financial regulatory agenda.

The calculation process requires first that the ‘thing’ being measured has to be identified and separated from its context; in Callon’s terms, it has to be ‘framed’. This may be a difficult notion to grasp, but is perhaps easier to see in the context of financial markets where the products being traded are synthetic bundles of law and measurement. For example, in order to be created, a ‘share’ in a company has to be separated from the individuals that comprise the organisation, the materials and processes of production, and indeed the markets in which its labour and goods are exchanged, and abstracted into a bundle of legal rights to an income stream, and / or voting rights. In the case of an asset based security, creating the security involves abstracting from the individual creditors (mortgagors, credit card users), and calculating a value based, inter alia, on estimations of probability of default.¹⁴³

As uncertainty is introduced into the process, the framing decisions become more complex, and the events, activities and decisions of others than have to be taken into account (i.e. included in the ‘frame’) in producing the calculation of probability expand almost beyond containment: in Callon’s terms, they ‘overflow’.¹⁴⁴ Any analyst constructing a mathematical algorithm to model risk

¹⁴¹ On the complexities involved in creating markets for different types of environmental ‘products’ see, for example, V.B. Flatt, ‘This Little Piggy’s Waste Goes to Market: The Bold New World of Non-Point Source Nutrient Trading and a Proposal to Bring Home the “Real Reduction” Bacon’ available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2269784&download=yes; C. Reid, ‘The Privatisation of Biodiversity? Possible New Approaches to Nature Conservation Law in the UK’ (2011) *Journal of Environmental Law*; id, ‘Between Priceless and Worthless: Challenges in Using Market Mechanisms for Conserving Biodiversity’ (2012) 1 *Journal of Transnational Environmental Law* 1.

¹⁴² Callon and Muniesa, n 139.

¹⁴³ Institutionalists have also drawn attention to this process, but emphasising the role of social structures and the state in creating the institutional framework for price formation, exchange and thus liquidity: B. Carruthers and A. Stinchcombe, ‘The Social Structure of Liquidity: Flexibility, Markets and States’ (1999) 28 *Theory and Society* 353.

¹⁴⁴ Callon, n 39.

will recognise the problem: which parameters to use, for example, or how to model tail risks (risks of high impact, low probability events). Callon uses the example of externalities to illustrate how economists explain and try to account for events and effects which are outside the immediate frame of the calculative process, and how attempts to 'internalise' those externalities upset those calculative processes and require the development of new ones. Again, if this all seems too abstract, think of markets which have been constructed by regulation, for example emissions trading schemes, or biodiversity markets. In order to enable trading in emissions, a number of tasks have to be accomplished. Most fundamentally, fungible 'products' have to be created through technologies of measurement in order to create units of carbon. Legal institutions have to be used to create rights of some kind, contractual or proprietary or some form of sui generis right with respect to that newly created product. Locations for exchange have to be constructed, even if only virtually as computer platforms. Rules of exchange need to be devised, and institutional structures put in place for their enforcement. Finally, prices need to be calculated through technologies such as auction design, calculations of value including accounting rules, calculations of probability, notably in risk models, and through other mathematical devices.¹⁴⁵

We can also see the problems of framing and calculation acutely in current financial regulatory debates, as regulators and academics are attempting to develop new methods of calculation in order to achieve financial stability. Key questions include how to calculate the impact of the failure of a large financial institution on the market and so calculate the cost which should be internalised by those institutions,¹⁴⁶ how to calculate the appropriate risk weights for assets, how to value assets (for example the debate between 'mark to market' or 'mark to maturity' in accounting provisions for different securities) and what should 'count' as capital under the Basle capital rules.¹⁴⁷ Critically, what effects should be brought into the frame and which should not is both a cognitive and a political question: as STS writers emphasise, calculative technologies have politics too.¹⁴⁸

This brings us to the critical second step, which is calculation. Although the stages are separated out in Callon and Muniesa's analysis, I would suggest that in

¹⁴⁵ On the role of risk models in the crisis see e.g. F. Gerding, 'The Outsourcing of Financial Regulation to Risk Models' in R. Kolb (ed) *Lessons from the Financial Crisis* (Oxford, Wiley, 2012).

¹⁴⁶ E.g. P. Kupiec and C. Ramirez, 'Bank Failures and the Cost of Systemic Risk: Evidence from 1900-1930' (Reserve Bank of New Zealand, 2011) available at <http://www.rbnz.govt.nz/research/workshops/March2011/4360883.pdf>.

¹⁴⁷ Spanish banks, for example, have suggested that Euro 50bn of deferred tax assets should be allowed to 'count' as capital, which would improve their capital position under Basle III: 'Spain set to spruce up banks with deferred tax change', *Financial Times*, 4 July 2013.

¹⁴⁸ The implementation of a call auction for closing prices at the Paris Bourse, for instance, brought a particular code of legitimacy in price formation (Callon and Muniesa, n 139). This particular algorithmic configuration was introduced as a response to the 'manipulation' of closing prices, a manipulation that was somewhat costless in a continuous auction closure. Other algorithmic solutions were possible, such as the reduction of closing prices to an average of the last tradings, but did not produce the same aggregative effect. As shown by the history of statistical devices, essays in aggregation are often political matters which are integral to markets: Callon and Muniesa, n 139, 1242.

practice they are interrelated: what gets framed gets calculated, but agents will only put into the frame what they can calculate.¹⁴⁹ One of the most striking aspects of the post-crisis regulatory activity is the search for new methods of measurement and new methods of calculation. For those in the markets, it includes the revision of risk models used to price assets, including the development of new technologies of calculating probability such as scenario analysis and stress testing, for calculating credit-worthiness including the use of market indicators such as CDS spreads, and for calculating asset values, for example in managing collateral and calculating capital requirements. The governance of financial risk requires significant calculative power: calculative technologies which can manage an extended list of diverse entities, which allow for a complex and varied set of relations between them, and which can formalise procedures and algorithms which can calculate, for example, probabilities of events occurring for a wide number of possible relationships between a large number of variables, and distil them down to a single figure or set of figures.¹⁵⁰

The focus on calculation is not only important in drawing attention to a key component of markets, it is of critical relevance for regulators as well. Following the governmentality literature, we need to take the act of calculation seriously as a technology of governance.¹⁵¹ As Rose and Miller argue, calculative practices are 'mechanisms through which the programs of government are articulated and made operable'.¹⁵² They alter the capacities of agents and organisations and the connections between them; they alter the power relations in which they are embedded; and they enable new ways of acting upon and influencing the actions of individuals.¹⁵³ By analogy, others such as Callon and Power suggest that the governance role of calculations extends to metrological practices, such as those engaged in quality control or audit, or environmental monitoring.¹⁵⁴

We can see the relevance of calculation as a technology of governance of the financial system not only in accounting and audit, which are critical, but also in the technologies of risk modelling for both micro and macro prudential regulation. In particular, the invention of macro-prudential regulation as an agenda requires for its implementation the development of technologies to measure the financial system and to derive indicators that can tell regulators in advance when a 'bubble' is forming and thus when and how it should be contained or burst. In the absence of those technologies, macro-prudential regulation cannot occur in the way

¹⁴⁹ On the dynamics of model building see e.g. A. Haldane, 'The Dog and the Frisbee', speech delivered to Federal Reserve Bank of Kansas City's 36th economic policy symposium 'The Changing Policy Landscape', Jackson Hole, Wyoming, 31 August 2012, available at <http://www.bankofengland.co.uk/publications/Pages/speeches/2012/596.aspx>; Gerding, n 145; J. Danielsson, 'Blame the models' (2008) 4 *Journal of Financial Stability* 321.

¹⁵⁰ Callon and Muniesa, n 139, 1232.

¹⁵¹ N. Rose and P. Miller, 'Political Power Beyond the State: Problematics of Government' (1992) 42(2) *British Journal of Sociology* 173; P. Miller, 'Governing by Numbers: Why Calculative Practices Matter' (2001) 68(2) *Social Research* 579.

¹⁵² Ibid, 183.

¹⁵³ Ibid.

¹⁵⁴ Callon, n 39; M. Power, *The Audit Society* (Oxford, OUP, 1997).

envisaged. Despite the high rhetoric, however, the search for such technologies is still in its infancy.¹⁵⁵ It should be for future researchers to analyse the socio-technical processes by which such technologies develop, which would make a fascinating study, as would the political and regulatory processes by which these become encoded in legal rules.

Calculative practices are also cognitive and communicative frameworks that produce power. They provide a discourse and a set of practices which constitute the world in a certain way which is comprehensible to those who share the knowledge required to perform those practices but is often opaque to those outside.¹⁵⁶ As such, having calculative power means having both capacity to calculate, and information and knowledge that others do not share.¹⁵⁷ The crisis brought to the fore several examples of the asymmetry in calculative power between financial institutions and regulators. These range from the adoption of internal ratings based approaches to calculating capital under Basle II, to regulatory reliance on credit rating models in calculating the risk-weights of assets. The post-crisis regulatory agenda is bringing to the fore the lack of calculative capacity on the part of firms, rating agencies, regulators and central banks to measure and manage risks within the market on a macro-basis.

PERFORMATIVITY AND ENDOGENEITY

The second element of Callon et al's theoretical analysis which has significance both for an enriched conception of markets and for their regulation, is that of performativity, or endogeneity. The key point here is that technologies of calculation do not just reflect reality but create new realities, which in turn can be the object of economic calculation.¹⁵⁸ Callon takes this one step further, to argue that markets act out economic theory, thus rendering it self-fulfilling: markets are also contingent, local, socio-technical-discursive arrangements in which the technology of economics plays a constitutive role.¹⁵⁹ In other words, modern markets do not simulate economic models because economic models accurately describe reality, but because they are structured and organised by those tutored in

¹⁵⁵ E.g. C. Lim et al, 'Macroprudential Policy: What Tools and How to Use Them? Lessons from Country Experiences' IMF Working Paper 11/238 (Washington, IMF, 2011); L. Ellis, 'Macroprudential Policy: A Suite of Tools or a State of Mind?', Head of Financial Stability, Reserve Bank of Australia, speech to the Paul Woolley Centre for Capital Market Dysfunctionality Annual Conference, Sydney, 2012.

¹⁵⁶ Miller, n 151; D. Mackenzie, 'The Credit Crisis as a Problem in the Sociology of Knowledge' (2011) 116(6) *American Journal of Sociology* 1778.

¹⁵⁷ MacKenzie, *ibid.* Gillian Tett makes an interesting observation with respect to how restricted access to Bloomberg terminals creates a siloed community of traders bound by a shared cultural discourse and cognitive framework, built through common access to data and opinions, and increasingly distant from those who do not share that access: G. Tett, 'In with the "On" Crowd', *Financial Times Magazine*, 25/26 May 2013, 62.

¹⁵⁸ A. Barry and D. Slater, 'Introduction: The Technological Economy' (2002) 31(2) *Economy and Society* 175.

¹⁵⁹ *Ibid.*

economics to think that markets should be structured this way, and therefore act to produce that reality.¹⁶⁰ Sociologists of accounting have drawn attention to how accounting and auditing practices are socially derived systems of measurement which construct a reality which is then used as the basis for actions, including governance.¹⁶¹ The regulation-created markets in emissions, and the attempts to create other 'environmental markets' noted above, provide other good examples of the enactment of economics.¹⁶²

In the context of financial markets, MacKenzie and Millo have shown how the Merton-Black-Scholes formula for computing price of financial derivatives was adopted by traders on the Chicago Board of Trade as it served their interests in competing with NYSE. Once put to use, the formula generated the price data needed to confirm its validity.¹⁶³ In a similar vein, MacKenzie uses the example of Long Term Capital Management's arbitrage strategy to argue that risk models do not just reflect realities and estimations of current states of knowledge, but actions are then taken on the basis of those predictions which render the predictions self-fulfilling. In his evocative phrase, models are 'engines' not 'cameras'.¹⁶⁴ At their extreme, as we see in high frequency trading, models literally drive markets without the intervention of human agency at the point of decision to trade or the trade itself.¹⁶⁵

MARKETS AS SYSTEMS

We have thus got to the stage of understanding markets as places (including virtual places) where actors enter into exchanges, in relationships which can be competitive or coordinative, supported by institutional structures which both shape and are shaped by the decisions of those actors and the social networks in which they are situated. In particular, through legal instruments actors can be bound in an interlocking network of contractual commitments which create complex structures of mutual obligation, and thus interdependence. One of the implications for financial regulators of this network of interdependences is the need to understand the patterns of risk distribution which are thereby created. Key components of such analyses are the identities of actors and their

¹⁶⁰ Callon, n 39.

¹⁶¹ Miller, n 151; Power, n 154.

¹⁶² The circularity of the argument makes it hard to either prove or disprove in abstract: instead what is needed is a detailed sociological study of the educational backgrounds of those making key organisational and calculative decisions in the markets to see if there is any force in the argument.

¹⁶³ D. Mackenzie and Y. Millo, 'Constructing a Market, Performing Theory: The Historical Sociology of a Financial Derivatives Exchange' (2003) 109(1) *American Journal of Sociology* 107.

¹⁶⁴ D. Mackenzie, 'Long-Term Capital Management and the Sociology of Arbitrage' (2003) 32 *Economy and Society* 349; D. Mackenzie, *An Engine not a Camera: How Financial Models Shape Markets* (Harvard, MIT Press, 2008).

¹⁶⁵ D. MacKenzie, D. Buena, Y. Millo, and J.P. Pardo-Guerra, 'Drilling Through the Allegheny Mountains: Liquidity, Materiality and High-Frequency Trading' (2012) available at http://www.sps.ed.ac.uk/_data/assets/pdf_file/0003/78186/LiquidityResub8.pdf.

relationships to others in the network. That is why the legal entity identifier project, possibly the least commented on aspect of the post-crisis regulatory agenda, should be seen as one of the most important. It is absolutely fundamental to the project of trying to see, map, and therefore regulate, financial markets.¹⁶⁶ It is also a sign of the cognitive closure that economics has had on regulators to date that it has taken so long for regulators to realise that they needed this type of knowledge.

In addition, actors in markets use technologies of calculation to create products and formulate prices. We have also seen that patterns and order in markets can be created through social networks, which can create systems of inter-relationships. Social network analysis is of particular interest in this regard, as central to the development of an adequate post-crisis regulatory agenda is the development of sophisticated theory of financial markets as systems.

Haldane, for example, has offered the analogy of ecosystems: in financial systems, as in eco-systems, each element is connected to another in complex patterns of interdependencies which a focus on just one of those elements eliminates from view.¹⁶⁷ Arguing against the neo-classical economic focus on risk analysis of individual institutions, such as value at risk methodologies or institution-specific stress tests, he argues for greater use of network diagnostics, system wide stress testing and the development of resilience of the network, not just of the individual institutions that comprise it.

An alternative perspective is to draw on sociological analyses of how organisations respond to their task environment when managing risk in industrial engineering systems. To this end, Perrow's analysis of 'normal accidents' has been drawn on by a number of sociologists to explain the financial crisis in particular, and the ultimate ungovernability of financial markets more generally, analogising them to industrial operational systems which are tightly coupled and have complex technological and operational interdependencies.¹⁶⁸

Analogies with the systems linking biological organisms or industrial operations are suggestive in different ways, particularly in emphasising the need for resilience, which has long been a feature of sociological analysis of risk.¹⁶⁹ However, they can de-personalise markets. Whilst this may make them attractive to economists or engineers, the agency of individuals makes financial systems qualitatively different. Using an ecosystem analogy captures the system attributes of markets but not the strategic behaviour of market actors. Ecological

¹⁶⁶ FSB, *A Global Legal Entity Identifier for Financial Markets* (Basle, FSB 2012).

¹⁶⁷ A. Haldane, 'Rethinking the Financial Network', speech delivered at the Financial Student Association, Amsterdam 2009, available at <http://www.bankofengland.co.uk/publications/Documents/speeches/2009/speech386.pdf>

¹⁶⁸ D. Palmer and M. Mayer, 'A Normal Accident Analysis of the Mortgage Meltdown' in Lounsbury and Hirsch, n 60; M. Schneiberg and T. Bartley, 'Regulating or Redesigning Finance? Market Architectures, Normal Accidents, and Dilemmas of Regulatory Reform' in *ibid.* Note however that Perrow argues that the comparison is misplaced; he attributes the crisis to essentially behavioural causes: C. Perrow, 'The Meltdown was not an Accident' in *ibid.*

¹⁶⁹ A. Wildavsky, *Searching for Safety* (London, Transaction Books, 1988).

organisms or engineering systems are not capable of strategically avoiding regulation, or adjusting their strategies in anticipation of the risk assessment or management processes that might be adopted by the regulator.

An analysis of the mechanisms by which social actors are linked is also needed. Here I suggest that we can draw STS and actor network theory (ANT) for its attention to the materiality of social life: how actors are inter-linked through material devices.¹⁷⁰ In the case of markets, and in particular financial markets, those devices include legal instruments¹⁷¹ as well as IT systems which constitute trading platforms,¹⁷² settlement systems, high frequency trading systems, or information providing systems such as Bloomberg which help constitute social groups bound by exclusive access to particular data and opinion.

Sociologists criticise the over-emphasis on technical systems as excluding the social, or even for being technologically deterministic,¹⁷³ and certainly theorists such as Latour and indeed Callon take the ultimate step of collapsing the social and the technical into one.¹⁷⁴ We do not necessarily have to take that step, however, in order to argue that the interactions of actors in markets occurs through, and is supported by, material devices such as legal contracts or IT systems, as well as by social networks and institutional structures, and by common calculative practices. It is through the combination of institutional structures (including legal instruments), social interactions, and technological and material devices that multiple exchanges occurring between hundreds of thousands of people in markets around the world are transformed to create a multitude of systems and sub-systems. For regulators, it is only by knowing and analysing the mechanisms and channels through which actors are linked (through legal instruments, IT systems, and in other ways), the pathways along which impacts can travel through the system, and how and where they will be felt, that they can begin to try to understand how risk is being distributed and how it could be managed.

A SOCIAL CONCEPTION OF MARKETS AND ‘REALLY RESPONSIVE’ REGULATION

Thus, by drawing together different elements of what are at present often disparate social theories of markets, it is suggested, a broadly-based ‘social conception’ of markets can be developed. The purpose is not to say that as a

¹⁷⁰ B. Latour, *Reassembling the Social: An Introduction to Actor Network Theory* (Oxford, OUP, 2005).

¹⁷¹ E.g. Riles, n 78.

¹⁷² D. Mackenzie, ‘Mechanizing the Merc: The Chicago Mercantile Exchange and the Rise of High-Frequency Trading’ available at http://www.sps.ed.ac.uk/_data/assets/pdf_file/0006/93867/Merc11.pdf.

¹⁷³ For discussion see S. Wyatt, ‘Technological Determinism is Dead: Long Live Technological Determinism’ in Hackett et al, n 138.

¹⁷⁴ Callon and Latour, n 54; Latour, n 170.

discipline economics has nothing to offer. On the contrary, the development of behavioural economics is of fundamental importance to regulators, and we hope, to economics. But as noted above, behavioural economics focuses predominantly on the behaviour of individuals, not the nature of markets themselves, and further still assumes that individuals act largely atomistically, interacting as observers of each other's behaviour, and that their beliefs and preferences are created through cognitive processes not social structures.

In short, neo-classical economics requires us to assume so much, particularly but not only with respect to behaviour, that it ceases to be of use to a regulator faced with a world in which all other things do not remain equal. The aim here has therefore been to draw together some of the strands of the very rich literature that exists in economic sociology and the various forms of institutionalism to suggest a socially enriched conception of markets. Along the way, I have pointed out some of the places where bridges may be built which can link different theoretical streams within this broad set of approaches, between them and the discipline of economics, and to indicate where and why they diverge. Of particular relevance to lawyers (hopefully), I have also suggested how we might move to developing a socio-legal theory of finance, and thus arguing in similar lines to Andrew Lang in his call for an economic sociology of law.¹⁷⁵ Nonetheless, there is clearly still much theoretical work to be done in all these areas.

The focus of the paper has not been on the role of law in financial markets as such, however, but on financial markets themselves. In shifting the cognitive framework in which markets are understood from the economic to the social, financial markets are analysed as mechanisms by which, or places in which, boundedly rational, cognitively biased individuals interact in a context of legal and non-legal rules and norms, but (breaking away from economic rationality, even as modified by behavioural economics) where social interactions and institutional structures shape how those actors interpret their own interactions and those of others in the markets in which they both participate and observe. In those interactions, individuals may act in the pursuit of profit and exhibit a particular calculating logic, but that logic is the result of social institutional structures, it is not one which is necessarily innate. Moreover, the tools of calculation are cognitive, communicative, and indeed legitimisation devices which themselves are socially derived and in turn shape the behaviour which they purport to measure, ultimately becoming self-fulfilling. Further, interactions are supported by material devices and social networks to form systems of interaction and distribution, and of particular relevance in financial markets, systems for the distribution of risk. Through these devices, multiple individual transactions are transformed into complex systems of interactions and interdependencies.

¹⁷⁵ Lang, n. 35.

IMPLICATIONS FOR REGULATORS – USING A SOCIAL CONCEPTION OF MARKETS TO REGULATE ‘REALLY RESPONSIVELY’

But so what? What should regulators do as a result? The standard argument against sociological approaches is that they do not produce clear policy prescriptions, just a lot of handwringing about how complicated social life is.¹⁷⁶ It is important therefore to draw out some of the practical implications for regulators in adopting a social conception of markets.

With Robert Baldwin, I have argued elsewhere that regulators need to be, and to varying degrees some already are, responsive to five elements: to the firms’ own operating and cognitive frameworks; to the broader institutional environment of the regulatory regime, by which is meant by the organisational / regulatory, normative, cognitive, and resource-distribution structures in which the regulator is situated (its ‘regulatory field’); to the different logics of regulatory tools and strategies; to the regulatory regime’s own performance; and finally to changes in each of these elements.¹⁷⁷

The theory has been criticised for making excessive epistemological demands on regulators.¹⁷⁸ We do not deny that it is challenging, but any regulatory strategy makes significant demands, particularly when it has to be conducted on a significant scale.¹⁷⁹ Regulators face several functional challenges: those of scale, those of legibility (knowing what they are regulating, and rendering it knowable), those of governing at a distance in time and space from those they are attempting to govern, and those of the inherent ungovernability and dynamic properties of people and things, as well as broader challenges of power, authority, and legitimacy. We do no more than analyse in theoretical terms the reality that regulators face on a daily basis. We are not creating complexity; we are instead describing an existing complexity in order to try to make a difficult task more manageable. Furthermore, I would contend that regulators do in practice take account of these different elements, albeit not always explicitly, and not always very well, although the more sophisticated are developing capacities to do just this. Developing a socially enriched way of seeing and knowing markets is central to the ability of market regulators, including financial regulators, to be able to regulate in a ‘really responsive’ way. Without understanding the market in this way, they will have no coherent analytical framework in which to understand each of the core elements of really responsive regulation: the behaviour of those they are regulating; the nature of the market and market environment which they are seeking to regulate and yet of which they are also a constitutive part; the logics of the technologies that both market actors are using in markets and that regulators

¹⁷⁶ See e.g. Fligstein n 36.

¹⁷⁷ Baldwin and Black, n 3.

¹⁷⁸ O. Perez, ‘Responsive Regulation and Second-Order Reflexivity: On the Limits of Regulatory Intervention’ (2011), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1970707.

¹⁷⁹ See C. Ford, ‘Prospects for Scalability: Relationships and Uncertainty in Responsive Regulation’ (2013) 7(1) *Regulation and Governance* 14.

are using as governance tools of markets, including technologies of accounting, risk modelling, and pricing or valuation; to understand how regulatory rules or interventions will have endogenous and often unpredictable effects, and what the dynamic changes might be in each of these elements.

Some of the implications for regulators of a social conception of markets have been noted in the course of the argument above. These and other implications can be drawn together here, though space precludes extensive analysis, and it should be emphasised that these illustrations are not exhaustive. They focus on six elements, which broadly track the framework of really responsive regulation: the behaviour of actors within markets; the dynamics of organisations; the nature of markets themselves, including their function, their organisation, and the role of law (including regulation) in their constitution; the relations between actors within markets including power relationships; the role of calculative technologies in markets; and the nature of markets as dynamic, complex, and adaptive systems which can change and can interact with regulation in unpredictable ways. The remainder of the section considers these in turn.

With respect to the *behaviour of actors within markets*, the logic of that behaviour cannot be assumed. There is a strong role for the calculating logic of *homo economicus* (even if it is cognitively skewed), but equally other logics are possible. For regulators, the relevance should be obvious: if the dominant logic in the markets they are regulating is one of rational calculation, they need to adjust their regulatory approach accordingly. Banking supervisors should be aware that they are not just supervising balance sheets; they are supervising organisations and actors which may see their regulatory rules as incentive structures for decisions ranging from asset allocation to corporate structure. However, the ‘logic’ or rationality of the individuals or organisations they are regulating should be an issue for empirical investigation, not theoretical assumption. Of particular relevance for regulators, empirical work thus far suggests that responses to regulation are more complex than the calculative pursuit of profit assumption would imply. Understanding the logic of behaviours and the institutional and social networks that drive them is relevant for regulatory strategies which seek to develop ethical cultures within banks, for example, or to understand the effects of remuneration policies on behaviours, as indeed are the actors’ organisational dynamics, which are central to the practical performance of regulation. Furthermore, decisions are affected by preferences which are formed endogenously, within the market context. Thus regulators need to focus on all aspects of the exchange process, not just marketing and disclosures but including the social networks in which actors are situated, increasingly made visible through new social media, as each will play a role in influencing the decisions of all actors, whether they are a hardened trader or trusting investor.¹⁸⁰

¹⁸⁰ On the ‘trusting investor’ see N. Moloney, *How to Protect Investors* (Cambridge, CUP, 2010).

In contrast to the neo-classical economic model, the social conception also requires that we take *organisations* seriously as market actors. The function of organisations is not just to minimise transaction costs and reduce opportunities for deviance, nor do organisations necessarily seek to maximise profits; instead organisations seek to survive. Furthermore, organisations cannot be assumed to be unitary actors in markets and their internal dynamics deemed irrelevant, other than with respect to how they manage transaction costs, opportunism, and principal/agent relationships between shareholders and managers. Instead, it should be recognised that organisations will seek to manage their environment, including the regulator, in order to reduce uncertainties. In addition, internal power relations, internal social networks, organisational structures, and processes, as well as the intangible organisational culture (or cultures), are all critical to how an organisation behaves in the market, as well as how it responds to regulation and to regulators. The two responses may not be the same: it could be gaming the regulation, but deliberately maintaining good relationships with the regulator in order to mask its gaming strategy.¹⁸¹

With respect to *markets* themselves, the social conception of markets provides a different cognitive framework for how regulators should see and know financial markets: how they should understand the function of those markets, their structure and organisation, the role of calculative devices in price formation and governance processes, the power relations and interconnections between actors within markets, the role that they themselves have in constituting markets and shaping decisions that market actors make, the role of trust and confidence in markets, and the relevance of internal organisational dynamics to understanding behaviour of organisations within markets. Despite recent advances in law and economics' understanding of the relationship of law and financial markets, these institutional and technological elements are still largely absent from their analysis.¹⁸²

With respect to the *function of markets*, financial markets are not just devices for raising capital, allocating risk or allocating scarce resources, but for stabilising uncertainty, including coordinating actions. They are indeed devices for allocating risks, but the systemic interdependencies thus created mean that regulators need to understand how risk within markets is being distributed, the techniques that market actors are using to manage risk, and the effects that regulatory rules and other interventions have both on structuring incentives, shaping preferences, stabilising or destabilising interactions and thus in managing risk and uncertainty. These concerns are more evident in the post-crisis regulatory agenda than they were pre-crisis.

With respect to *market organisation*, it cannot be assumed, as under the neo-classical economic conception, that all markets are the same and the only justifications for regulation are based in fixed categories of market failures or

¹⁸¹ FSA, *The Failure of the Royal Bank of Scotland: Financial Services Authority Board Report* (London, FSA, 2011).

¹⁸² See the articles (2013) 41(2) *Journal of Comparative Economics* 311-467.

principal-agent problems. Instead, regulators have to recognise that financial markets are heterogeneous, that in many areas they take the form of production markets rather than pure exchange markets, a fact that the emphasis on market-based finance omits. Further, that market structures are shaped by the socio-political institutional context in which they are situated, including that of the state. Indeed, the state occupies a dual role in financial markets as both constituter of and participant in those markets. This duality is particularly acute in the sovereign debt market and in the state's role (through the central bank) as lender of last resort, creating fundamental interdependencies between states (as liquidity and ultimately bail-out providers) and financial institutions (as buyers of sovereign debt), discussed above.

Moreover, there is a reflexive relationship between institutional structures and the behaviour of individuals and organisations. In particular, the analysis has also drawn attention to *the role of law and regulatory rules* in constituting both markets and the products which are traded, the paradoxical effects that law can have in producing uncertainty within markets through its enforceability, and to the endogenous effects that are created when law is used to avoid law: when private legal transactions are crafted to avoid regulatory rules, which are in turn adjusted to catch the avoidance in a continual regulatory dance. Regulators therefore need to be aware that their interventions will produce negative and positive endogenous effects through their interdependence and interaction with the rules and practices of market actors and other regulators.¹⁸³

As regards *relations between actors in markets*, in contrast to the neo-classical economic conception, relationships other than principal-agent relationships are important in understanding market dynamics. Regulators need to understand the patterns of interrelationships within markets, as these are used to create and filter information and knowledge, and create the trust and confidence which are critical to financial markets. Social networks affect critical features of markets, including investment and trading decisions, valuations, and access to credit and liquidity. In addition, patterns of social networks, supported by institutional infrastructures and material devices, are critical for price formation and for understanding the distribution of risk, so much so that even the identities of those within the network matter. We can also link social network analysis to the familiar observation that the 'relational distance' between regulator and regulatee can affect the regulatory dynamic.¹⁸⁴

Further, markets, and their regulation, are also shaped by *power relationships*, which not only shape which rules are adopted and which are not (the standard fare

¹⁸³ As in the case of the interaction of the 'fair value' accounting rules and the risk management strategies of regulators and market actors, which many argue drove asset prices down in a vicious spiral during the crisis: see for example G. Plantin, H. Sapra, and H.S. Shin, 'Fair Value Accounting and Financial Stability' (2008) *Banque de France Financial Stability Review* 85 (though for an opposite view see C. Laux and C. Leuz, 'Did Fair-Value Accounting Contribute to the Financial Crisis?' (2009) available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1487905).

¹⁸⁴ D. Black, *The Behaviour of Law* (Bingley, Emerald Group Publishing, 1970).

of political economy), but also which rules are observed and which are not, and when suspension of legal rules is deemed acceptable, and by whom.¹⁸⁵ Power is derived from institutional structures, positions in social networks and the possession of calculative technologies. With respect to legal rules, including contracts, power is manifest in the formation, interpretation and application of these rules. In particular, enforcement of both contracts and regulatory rules is as much about power as it is about interpretation.¹⁸⁶

The social conception of markets also requires regulators to look closely at the *calculative technologies* used within markets, and indeed to govern them: how values are calculated, and how risk is priced. They cannot simply assume that the price will be set simply by the interaction of buyers and sellers, and that regulators need only to focus on making markets approximate in practice to the markets of neo-classical economic theory as closely as possible. Instead, both products and prices have to be recognised to be the outcome of calculative devices of abstraction, framing, measurement and calculation. Furthermore, calculative devices are techniques of governance for regulators as well as market actors, and regulators need to have equal calculative power to regulatees if they are to be able to use calculative devices effectively as technologies of governance. However, calculative technologies, including risk models, can drive markets, becoming self-fulfilling. Technologies of calculation, and their cognitive and communicative dimensions, are thus critical both to the performance of financial markets and to the performance of their regulation, but have their own endogenous and unpredictable effects.

Finally, markets should be understood as complex adaptive *systems*, and not necessarily as a series of bilateral transactions which simply lead to aggregative effects, and the only concern being that of the externalities that those bilateral transactions may have on others. Multiple transactions can create externalities but also a network of relationships and a system of interlocking rights and obligations. Through institutional structures, social relationships, and material devices of legal or technological infrastructures, multitudes of individual transactions are converted into systems of interconnections and interdependencies, such that impacts created in one place can travel through the system in complex and unpredictable ways. Regulators need to manage externalities but also, as they are belatedly doing post-crisis, they need to view markets as systems supported by institutional, social and technological infrastructures, not as a series of unconnected exchanges.

¹⁸⁵ This plays both into issues of regulatory compliance, and into decisions of when contractual provisions are enforced and by whom. For countries at the core or apex of the financial system, rules may be operated very differently than they are for those at the periphery: see Pistor, n 48.

¹⁸⁶ See respectively Pistor, n 48 and Black, n 92.

CONCLUSIONS AND REFLECTIONS

Regulators and market actors are searching for new and more effective ways to manage financial markets, but are struggling to find a cognitive framework in which to frame and develop their policy responses. Behavioural economics is making some welcome inroads into the debate, but sociological theories of markets also have a great deal to offer in developing a new cognitive framework. However, at present, each sociologically rooted theory of markets tends to focus only on some elements of markets to the exclusion of others: institutional structures, or social networks, or calculative devices, or technological systems. This article has drawn these elements together to create a multi-dimensional social conception of markets which could be used by regulators to develop strategies for their regulation. In doing so in a relatively short space it has necessarily had to provide a fairly sparse outline of the economic model and cut some theoretical corners, but tried to do so whilst maintaining an underlying analytical coherence and consistency.

Theory building is diverting, but regulators need practical help, and they need it urgently. The article has therefore also drawn out some of the key practical implications for regulatory policy, though these are not exhaustive. Some of the policies which might flow from this analysis are already being discussed, some are even being pursued. But the post-crisis regulatory agenda is developing piecemeal technocratic solutions without a clear analytical and cognitive framework, and in particular without a fully revised conception of markets.

Can we say that if regulators base their regulatory strategies on a social conception of markets that this will lead to radically different strategies than those being adopted at present? In some instances, that is so, but the detailed analysis of which regulatory rules are based on neo-classical conceptions and which on some other conception, if indeed such rationality in policy making can be assumed, is left for another time. Can we say that if regulators adopt the social conception of markets that another crisis will be averted? Almost certainly not; no one should be so bold as to make such a claim (though some do).

But the social conception of markets does offer the basis of a systematic analysis of the dynamics of financial markets, their institutional, social and technological elements, drawing attention to the interdependencies that exist between participants within markets, and to the endogenous and unpredictable effects that regulation can have. As such it is an important corrective to the dominant economic discourse, and reminds us that regulators operate in a world in which key aspects of markets or behaviour cannot be assumed to conform to the edicts of economic models. How regulators see and know what they are regulating is fundamental to how they regulate it. However, the cognitive framework that regulators adopt can create blind spots, areas or activities which are not caught within that frame. Actors can then move into the spaces left unseen by regulation. Even the term 'shadow' banking illustrates this dynamic:

the ‘shadow’ is only the ‘shadow’ caused by the regulatory spotlight shining elsewhere. Changing cognitive frameworks is difficult, however, and complicated in the case of financial markets by the fact, as we have seen, that actors enact financial models of markets, and even its logics of action, on a continual basis. This article tries to offer regulators an alternative cognitive and analytical framework to use in developing policy responses, to stimulate other ways of knowing and seeing financial markets, and therefore to identify aspects of markets which are left out of standard economic accounts which regulators should explore and to which they should respond. The use of any cognitive model of markets within policy making will in practice be distorted throughout the policy and regulatory process by the forces of power and the familiar triptych of ideas, institutions and interests that affect any such processes. Nevertheless, in proposing a social conception of markets, this article aims to provide a basis from which a socially richer, coherent regulatory agenda can be built, even if the political realities of policy formation and regulatory dynamics mean in practice its implementation will always be some distance from the theory that initially inspired it.