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# Learning to Cope with Uncertainty: On the Spatial Distributions of Financial Innovation and Its Fallout

*Ewald Engelen, University of Amsterdam*

The final year of the latest boom will enter financial history books as a Janus-faced year.<sup>1</sup> While the problems that were ultimately to unlock the triumphant course that the financial markets from 2003 onward had taken, had been brewing in their nooks and crannies for quite some time, disaster nevertheless struck unexpectedly in August 2007. The increasing degree of self-confidence demonstrated by financial agents up to July 2007 was shattered in a mere couple of weeks. The expectation, of regulators as well as market participants, that the financial sector, because of new technologies, techniques and instruments, had finally mastered the trick of turning uncertainty into calculable risk, was finally proven false. Financial innovation, the rise of new financial agents and financial internationalization were seen by practitioners as having resulted in a world in which risk was spread so thin over so many different markets, localities, and institutes as to have become virtually irrelevant. Regulators, who from time to time voiced their worries over what they perceived as rising opaqueness and innovation run wild, were told by industry representatives that these worries were unfounded because we had entered a world in which opaqueness was simply the counterimage of the increasing fragmentation of risks. Moreover, new risk management techniques, the so-called "Value-at-Risk" modeling tools, based on increased computing powers as well as new "financial facts", were said to ensure that the few remaining risks would be easy to check and control (see Augar 2005, 125ff.; [www.riskglossary.com](http://www.riskglossary.com)).

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History proved otherwise. In a few weeks time self-confidence was shattered, the beliefs in the rise of a new light weight and risk proof financialized economy were gone, while regulators suddenly faced a crisis of distrust among bankers, who, because of the wide dispersal of “toxic” financial products, were unwilling to grant each other liquidity. At the time of writing, this is still the case; banks are unwinding their “toxic” entanglements with other players one step at the time in order to preclude a giant meltdown, resulting in jittery markets that are easily spooked even when the main cause behind the credit crisis, that is, the problems in the US sub-prime mortgage market, have slowly receded in history.

Although the regulatory stance toward financial innovation has always been problematic and spatially diverse, the general trend was nevertheless toward more self-regulation; let financial agents control their own risk profiles for they know best, have the best tools and have the most interest in “continuing the dance”. That too has radically changed since August 2007. Regulators worldwide are currently discussing new constraints to save financial markets from themselves. Measures under discussion range from higher levels of mandatory capitalization, redesigning bankers remuneration packages, better international regulatory coordination, and shifting part of the over-the-counter (OTC) derivative trade to formal exchanges to more transparency, more public control over rating agencies and improved risk management techniques.

While suggesting a truly *political* analysis of financial markets, this chapter focuses not so much on the costs and benefits of these regulatory responses but uses the return of uncertainty to test the usefulness of a number of more classic sociological claims concerning the importance of social, spatial, and reputational proximity for inter-organizational trust-building. While spatial variance, despite the strong homogenizing expectations voiced by some (O’Brien 1992; Strange 1996; Castells 1996; Cairncross 1998), has remained causally relevant for the functioning of financial markets, as is demonstrated by the undiminished importance of financial centers (see Cassis 2007), the return of uncertainty implies a simultaneous replay of the importance of proximity and the “thick” knowledge it generates about the trustworthiness of counterparties to overcome the atmosphere of suspicion which has soured the financial markets in 2007. AQ1

As such, this is a study in the sociology of finance, which sees the crisis of 2007 as a unique chance to investigate the microsociological foundations of contemporary finance and their diverse spatial articulations, suggesting that the functionality of proximity for the workings of

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the financial “system” is a variable not a constant, which depends crucially on the extent to which markets, agents, and the techniques that are available to them are able to transform uncertainties in risks. That ability, in turn, is itself a conjunctural feat that is subject to the dynamics of financial markets (Kindleberger 2000). In other words, in periods in which markets resemble the picture painted by mainstream finance, “financial facts” are largely self evident, allowing for more or less anonymous exchange on spot markets, while in periods of uncertainty in which markets behave more like the “price discovery machines” described by Austrian economists like Hayek, Schumpeter, and Von Mises, “facts” are contested, resulting in patterns of trade that are built around more proximate modes of trust.

The structure of this chapter is as follows. Section 2 gives a brief overview of the radical rupture that global financial markets experienced in 2007. On the basis of some empirical exhibits it gives readers a sense of the stark contrast in moods and sentiments experienced by traders, asset managers, and bankers. The subsequent section builds upon this and describes, first, the extent of financial innovation and its unequal spatial consequences and, second, the spatial effects of the rise of uncertainty. Section 3 uses sociological literature to understand the different empirical responses to the return of uncertainty. This chapter ends in a speculative mood by attempting to answer the question what the spatial consequences might be of the different ways of coping with uncertainty.

### A Janus-faced year

The year 2007 was a year with two faces. Until early August daily turnover at the worlds’ financial exchanges was continuously breaking records, while banks, hedge funds, and other financial agents reaped bumper profits, and politicians and regulators were anxiously discussing deregulatory measures to accommodate the wishes and preferences of financial agents in order to ensure the continuing competitiveness of their jurisdictions. From August onward this turned into its opposite. Markets ran dry, prices and values collapsed, banks had to announce big write downs and credit losses, while financial centers rapidly lost employment. Just like seven years earlier a fresh round of financial hubris came crushing to the ground.

In the middle of 2007, financial markets reached their – as of yet – historical zenith. In global currency markets the value of daily trade had

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approximately tripled in fifteen years time, from \$650 billion in 1989 to well over \$3.2 trillion in 2007 (BIS 2007, 4). A similar picture emerges from developments in other financial markets. The annual turnover of exchange traded bonds, for example, underwent a fourfold increase in value. Equity trade boomed tenfold over the same period, from \$5 billion in 1990 to \$70 billion in 2007 (WFE 2007). This had everything to do with the increasing popularity of “logarithmic trading”, the rise of active traders such as “Quants” and other hedge funds, and the simultaneous demise of the patient investor. AQ2

However, these figures are dwarfed by the size of global derivate markets. Encompassing a range of financial products that share the property of being “derived” from the value of underlying assets (hence the name: “derivative” from “being derived from”), derivatives have become the bread and butter of modern financial markets, generating growing shares of the fee incomes of investment banks. This decade has seen an enormous expansion of the underlying assets that banks use to construct new “synthetic” financial products. While derivatives used to be backed by equities, bonds, and commodities, increasingly they are “derived” from consumer debts, mortgages, student loans, car loans, credit card debts, debit cards, intellectual property rights, in short anything that generates a steady income stream. Although the oldest derivate markets were set up to facilitate the trade of “futures” on agrarian commodities and can be traced back as far as several centuries ago (London, Amsterdam, Paris), most formal derivate markets are linked to the rise of finance since the mid-1970s (see Kynaston 1997).

Most derivatives, however, are not traded on exchanges at all, but are traded bilaterally between two parties or, as it is called Over-The-Counter (Morgan 2008). While hard to quantify, triannual surveys of the Bank for International Settlements (BIS) demonstrate that these markets have experienced the strongest growth of all financial markets (BIS 2008a). From a negligible size in the early 1970s, OTC derivative markets have reached a size of \$596 trillion in notional outstanding amounts in 2007, compared to \$28 trillion of outstanding futures contracts and \$55 trillion of outstanding options on formal derivative exchanges (BIS 2008b). It is the OTC market that has spawned all these new “synthetic” products that are referred to as “alphabet soup” in the business press. Their construction was made possible by the rise of new mathematical techniques (Efficient Market Theory, Black-Scholes theorem, Option Pricing Theory; see MacKenzie 2006), the virtualization of exchange-based trade, the availability of new forms of ICT and expanded calculative powers, as well as the AQ3

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construction of “new financial facts” – that is, pricing hard to price securities – by risk specialists like Standard & Poor’s, Moody’s, and Fitch (see MacKenzie et al. 2007).

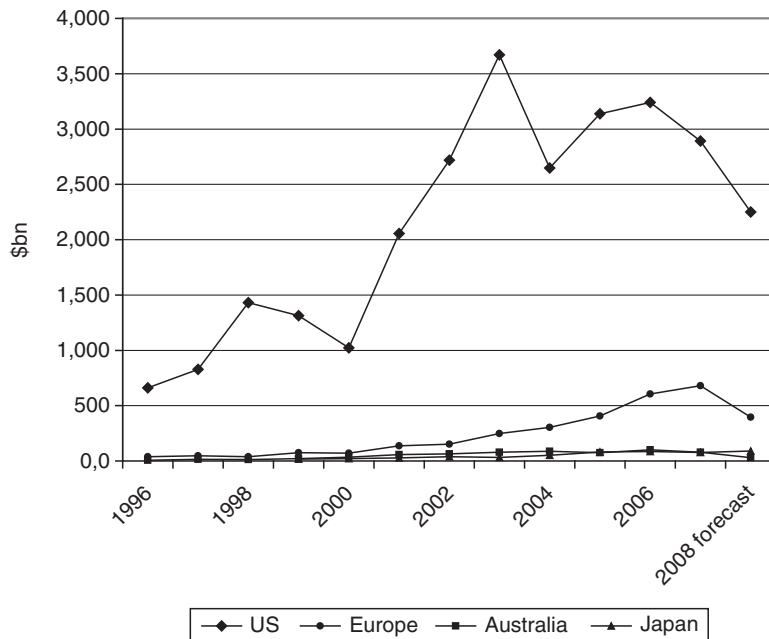
Most of these products date from the late 1990s and represent the most profitable segments of the worlds’ financial markets (see Tett 2006, 2008). However, given the inability to attach intellectual property rights to these financial innovations, and the ensuing quick turnaround of these new instruments, resulting in rapidly declining rates of profits, there is an enormous urge to innovate (Tufano 1989; Augar 2005). While good empirical research on the institutional, organizational, social and cultural conditions of financial innovation is lacking, the spatiality of financial innovation suggests that these have to do with concentration, proximity, scale, and diversity. For anecdotal evidence clearly demonstrates that most innovations originate from trading desks in the biggest and most sophisticated investment banks that are primarily located in the biggest financial centers, that is, New York and London (Augar 2005; Knee 2006; Erturk and Solari 2007; Tett 2006, 2008). AQ4

This is demonstrated by the geographical distribution of gross values of securitized assets, presented in Figure 5.1. These figures show the disparities between different places in terms of the underlying value of the assets being securitized. As such, this suggests an unequal distribution of the conditions of innovation – i.e. concentrations of sophisticated financial agents, pools of liquidity, dense networks of traders, consultants, bankers and their clients, and, finally, diverse pools of expertise, biographies, human capital, trading techniques, heuristics, financial markets, and financial instruments – over space. Apparently, the United States is and remains the largest pool of capital and the main locus of financial sophistication, generating a level of securitized assets that is seven to tenfold that of Europe.

Within Europe too, there are telling differences between levels of securitized assets, as is demonstrated by Table 5.1. The largest issuers by far are the UK, the Netherlands, Spain, and Italy, while big European economies such as France and Germany score much lower. These differences reflect different degrees of sophistication of national banking systems as well as differences in the organization of national housing markets, given that the securitization of residential mortgages is the largest category.

What these exhibits also show is the dual faced nature of 2007. An advertisement of Standard & Poor’s shown that was carried by a 2006 special issue of *Institutional Investor*, a professional investor periodical, on the prospects of securitization, is telling in this regard. The cover of the issue, depicting rays of hope and glory that surround the globe, clearly

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**Figure 5.1.** Trends in securitization issuance

Source: ISFL, Securitization Report (2008).

AQ5

speaks of the bullish mood of the markets in 2006. Likewise, the Standard & Poor's advertisement offers data services to buyers and sellers of securitized products, suggesting that experience and reputation are sufficient to be able to steer a risk free route through the increasingly opaque and continuously shifting mass of securitized assets. The main message reads:

You know the big providers of securities evaluations. But do you know what makes Standard & Poor's different? With over 35 years of experience in the pricing business, we're continuously expanding to meet your evolving needs. ABS, MBS, CMBS, CDO's and more – we've got you covered. And, we work closely with you to anticipate and address new market developments. Knowledge, independence, and direct access to the professionals behind the thinking. It's what you expect from a market leader (Institutional Investor News 2007).

What is striking about this quotation is not so much the self-confidence of which it speaks, but rather the promise of security it performs; "we've got you covered", as if the public role of the private corporation of Standard & Poor's is comparable to that of the police in guaranteeing domestic security. It is suggested that expertise, experience, and professionalism are

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**Table 5.1.** Securitization issuance by country of collateral

	2007:Q1	2007:Q2	2007:Q3	2007:Q4	2007 Total
Belgium	–	0.2	3.9		4.1
Denmark	0.1	0.4	–		0.5
France	1.3	1.8	–	0.8	3.9
Germany	3.5	8.2	1.8	5.1	18.6
Greece	–	1.5	1.3	2.5	5.3
Ireland	2.9	3.2	2.3	2.0	10.4
Italy	6.7	4.1	3.1	2.5	26.3
Netherlands	5.8	10.6	11.5	12.9	40.8
Portugal	2.9	2.4	2.6	2.9	10.8
Spain	16.5	14.4	14.5	15.7	61.1
Switzerland	0.4	0.3	–		0.7
UK	62.5	62.1	30.2	17.8	172.6
Multinational	–	3.2	1.9	2.4	7.5
Total	102.8	123.9	73.3	65.0	365.0

*Source:* European Securitization Forum.

sufficient to tame chance, so buyers and sellers of securitized assets have nothing to fear as long as they use the securities evaluations of Standard & Poor's; "we've got you covered!" As has become clear since the credit crunch, rating agencies such as Standard & Poor's have systematically overrated the values and underrated the risks of securitized assets, raising worldwide concerns over conflicts of interests and the need to rate and regulate the rating agencies; "qui custodiat custodes"?

Given the unequal spatial distribution of financial innovation (and its rewards), it should come as no surprise that the fallout from innovations gone sour has also taken an unequal spatial pattern. At the moment of writing, more than \$1,000 billion of financial assets have melted away. Most of these losses have been booked by financial firms that are located in the very same places and territories that were identified earlier as the main locations of financial innovation. The biggest losers have been big US and UK financial groups such as Citicorp, Wachovia, Washington Mutual, RBS, HSBC, and Barclays, while a further band of losers can be found in North-Western Europe, suggesting a strong causal linkage between the degree of involvement in financial innovation and the extent of damage inflicted. However, some observations do not fit this narrative. For instance, some regional German banks, while outside the main circuits of financial innovation, were nevertheless severely hit by the credit crunch, as were sophisticated Swiss and American investment banks such as UBS, Credit Suisse, Bear Sterns, Merrill Lynch, and Lehman Brothers, suggesting that the fallout followed a core-periphery pattern; victims were either located at the core of financial innovation and hence so much implicated in those



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categories of assets that they could not divest them quickly enough, or they were so much at the periphery of financial innovation that they simply did not know what they were buying and were hence caught unawares when the mood suddenly turned foul. As such, the fallout too followed a very particular spatial pattern that had everything to do with the flows of knowledge within the network-based structures of contemporary finance.

### From risk to uncertainty

There are (at least) four lessons that can be drawn from the narrative presented above. First, despite strong claims by pundits, practitioners, and academics that financial markets had finally transcended the economy of blood, sweat, and tears, the credit crunch has clearly demonstrated that to be a false presumption. Despite their increasingly ethereal and esoteric nature, the synthetic products that are being traded on the OTC derivative markets are thoroughly grounded in the economy of everyday life. The US sub-prime mortgage market where the August 2007 crisis originated, was built on a business model that was viable as long as housing prices increased. When that expectation was no longer met, households started to recognize that they had shouldered debts that transcended the value of their collateral. The ensuing “voluntary evictions” had an immediate downward impact on the value of the MBS’s that were constructed on the back of these mortgages. That in turn led to a drying up of the secondary market for mortgages and a sharp increase in the price for insurance against possible defaults provided by the so-called “monolines”. Suddenly, a wide variety of financial agents – sophisticated as well as mainstream – were seen to possess an uncertain amount of “toxic” products that had become unmarketable. And since agents were unable to assess the extent of the fallout on the books of their counterparties, liquidity in the interbank market dried up, worsening the prospect of attaching sound values to derivatives. In other words, it was developments in the so-called “real economy” that stood at the cradle of the credit crunch, while the credit crunch in turn will have substantial effects on the “real” economy; estimates have it that the American writedowns will add up to \$400 billion, equivalent to 1 to 1.5 percent of the annual US GDP (IMF 2008).

Second, that, contrary to expectations of market insiders, market risks were not distributed thinly over many different financial agents and were

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hence negligible. Until August 2007, regulators like IMF and BIS harbored the expectation that because of financial innovation and the rise of new financial agents such as hedge funds and private equity funds and the transformation of sleepy institutional investors into active financial players that had mopped up most of the excess liquidity, risk was distributed much more widely than before, resulting in a more robust financial system. Rather, what happened after the outbreak of the sub-prime mortgage crisis suggested the reverse. Big multi-divisional banks and bulge bracket investment banks still appeared to play central roles in the global financial system, meaning that most of the toxic products ended up in their books. The web of finance may have become larger, more complex and denser, it is still held together by only a limited number of nodes.

Third, that despite new global regulation (Basle II) and increasing calculative powers, transparency has not proven to be the “best disinfectant”. When many derivatives had over night become highly toxic, it became apparent that no one had an adequate estimate of their size, type, and distribution. Any counterparty could well be the owner of large parcels of toxic products, greatly endangering its existence over time. The distrust that slowly crept into the interbank markets has caused a gradual drying up of liquidity, which is only partially and temporarily alleviated by the huge amounts of liquidity that central banks have pumped into those markets.

Finally, and that is the lesson that is at the core of this chapter, the claim that uncertainty was finally transformed into calculable risk was powerfully refuted. Despite the impressive concentration of expertise, manpower, and calculative capacity in locations like London and New York, financial markets were suddenly seen to behave in irrational ways. Apparently, real existing financial markets contained an indefinable residue that escaped the models of modern finance theory, turning what had appeared to be calculable risk into paralyzing uncertainty.

The distinction between risk and uncertainty was minted by the founder of the Chicago-school of economics and erstwhile Max Weber translator, Frank Knight. As Knight famously wrote in his 1921 classic:

The fact is that while a single situation involving a known risk may be regarded as “uncertain,” this uncertainty is easily converted into effective certainty; for in a considerable number of such cases the results become predictable in accordance with the laws of chance, and the error in such prediction approaches zero as the number of cases is increased (Knight 1921, 42).

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In other words, given a large enough sample, variance can be turned into probability and hence can be priced away by means of insurance techniques. However, crucial about Knight's insight is that it is not always possible to make enough observations or to determine to which category these observations belong, suggesting that not every uncertainty can actually be transformed into risk.

That is precisely what the credit crunch demonstrated. Suddenly financial markets started to behave in a manner that was out of sync with the expectations of traders, which were informed by the mathematical models that were supposed to describe the workings of these markets. In other words, there suddenly appeared to be a mismatch between "model" and "muddle", raising pressing questions about the ontological status of mainstream finance theorems. While those questions cannot be discussed here, there are at least two considerations that should be faced.

First, does the credit crunch disprove the performativity thesis that has been proposed by scholars like Michel Callon (2005, 2007) and Donald MacKenzie (2006, 2007)? Since that thesis is embedded in a constructivist perspective on social reality and hence conflates epistemology and ontology, in fact claiming that theoretical frameworks do not represent a given social phenomenon but are performing these phenomena, it does not allow for ontological residues that turn against the "engines" that are supposed to generate them. But that seems precisely to have occurred with the credit crunch. That social reality does not follow the scripts laid out by "performativity theories" suggests that the observation of performative effects has more to do with a temporary alignment of theory and reality than with the actual conflation of epistemology and ontology performativity theory implies. In fact, crises like the credit crunch indicate that the conflation of theory and reality that performativity theory postulates is actually a classic example of the "epistemic fallacy" for which post-modern thought is castigated by critical realists (Bashkar 1975; Sayer 2000, 27). While Millo and MacKenzie in their contribution to this volume speak of the "inaccuracy" of risk management models and explain their successes (sic!) by their "social usefulness" and hence seem to backtrack from MacKenzie's earlier performativity claim, the chapter is much more about the way in which these "technologies" solve social coordination problems, stressing intersubjective acceptance, than about the real effects of their empirical inaccuracy. So in my opinion the judgment is still out whether the credit crunch can be reconciled with the performativity thesis.

AQ6

AQ7

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Second, what caused the mismatch between “muddle” and “model”? Is it something which merely requires further elaboration of the premises underlying current models of risk management and is it hence compatible with the reigning neoclassical framework or is it intrinsically incompatible with such a framework and are we hence in need of a different economic paradigm? A number of explanations floating around suggest the former. The increasing reflexivity of market participants suggests that more complex risk management models are needed. The same is true for claims that perverse incentives or faulty data are the root of the problem. In all these cases, the problem is quantitative not qualitative so to speak. It is a matter of further refinement or adding further complexity, not one of radical overhaul.

Some, however, do claim that that is needed. Following his Austrian predilections, former Fed-chairman Greenspan maintained in an op-ed piece in the *Financial Times* that risk management models were intrinsically unable to model adequately “the human passions” and the large movements between fear and euphoria they incited. “Current systems of risk management”, thus Greenspan:

[D]o not fully capture what I believe has been . . . only a peripheral addendum to business-cycle and financial modelling – the innate human responses that result in swings between euphoria and fear . . . This, to me, is the large missing “explanatory variable” in both risk-management and macroeconomic models . . . (Greenspan 2008).

What we have here are two diametrically opposed theoretical perspectives on economic life. The first postulates a world that is inherently knowable and quantifiable, inviting agents to rationally plan their future courses of action, as if their preferences and the future ways of satisfying them are completely transparent. The second stresses complexity and multi-causality, and contrasts these with the limited cognitive capacities of agents, implying that notions like maximization and rationality belie reality. While both deliver strong pro-market arguments, they could hardly be further apart. Whereas the neoclassical paradigm emphasizes the *allocative* efficiency of market exchange, resulting in economy wide equilibrium, the Austrian school of economics praises markets for its *dynamic* efficiency, meaning its ability to discover new preferences and new ways to satisfy them (see Hayek 1949; Hodgson 1993). AQ8

Widely being seen as diverging paradigms within economics, it is striking that the two theoretical frameworks appear to have empirical leverage over the two parts of 2007. The first half of 2007 by and large answered the

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calls of the neoclassical paradigm, while the second half, with its high degree of uncertainty and its sudden opaqueness, was more in line with the tenets of Austrian economics. How can it be that two diametrically opposed theoretical frameworks are empirically adequate during different parts of a single year? This raises interesting questions on what the nature of economic reality has to be in order to make these two frameworks subsequently true.

### Social responses to uncertainty

Whereas uncertainty is the “repressed other” of neoclassical economics, in some strands of economic sociology it is the main independent variable that explains the nature of the social relations that agents construct. In a recent overview of the state of the art in economic sociology Neil Fligstein and Luke Dauter distinguished three approaches of the market within economic sociology on the basis of their respective causal mechanisms. The first is “performativity”, the second is “institutions”, and the third is “networks” (Fligstein and Dauter 2007). It is the latter that is relevant here. Harking back to Granovetter’s seminal 1985 paper, the network approach in economic sociology takes the social embeddedness of economic ties as being functional for the construction of long term relations, which help to decrease the uncertainty that economic agents face in view of the “big divide” that separates the supply and demand sides of markets (see Granovetter 1985; Fligstein and Dauter 2007). The key concept is “trust”. Trust is the emergent property of ongoing exchanges between agents. Since each next moment of exchange allows agents to punish the other for breaching formal and informal rules, the continuation of the exchange signals both the value that the partners attach to the exchange relationship as well as the mutual trustworthiness of the exchange partners. Despite being infected by functionalism, the latest manifestations of network theory appear especially useful to analyze the fall out from the current credit crunch, since, as many commentators have emphasized, it is not so much a crisis of liquidity or solvency as of confidence and trust.

Network theorists have stressed that trust has efficiency effects that go beyond those postulated by neoclassical economics. The degree of confidence on the side of agent A that B will abstain from opportunism, which is the essence of “relational trust” in an economic context, determines the costs of actually accomplishing a transaction. As such, trust is functionally

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equivalent, albeit economically superior, to formal contracts that allow arms' length economic exchange. More recent network research, however, has indicated that these efficiency effects are not universal but context dependent. Much depends on the level of uncertainty surrounding the exchange. Under conditions of high uncertainty the trust that is implicated in "strong ties" appears to be functional. Under conditions of low uncertainty, however, "strong ties" lose their functionality, while at the same time tying agents to networks that could block their move to other networks that offer more profitable exchange opportunities. The latter effect was nicely captured by Granovetter's "strength of weak ties" (Granovetter 1981) and Burt's notion of "structural holes" (Burt 1992), capturing the importance of combining two kinds of ties (strong and weak ties, bridging and bonding relationships) to give agents access to different kinds of information and hence to different market opportunities.

Until July 2007, the financial economy appeared to be highly transparent, resulting in an increasing proliferation of weak ties, simultaneously spanning and crossing functional, sectoral, and territorial boundaries. While "distance" did not disappear, the functional, organizational, and territorial proximities that are required under conditions of uncertainty arguably lost much of their salience. As the earlier discussion suggested, the production of trust ("we've got you covered") was largely outsourced to quasi-private rating agencies. As long as one could trust the empirical adequacy of the ratings of Moody's, Fitch, and Standard & Poor's, there was no reason to doubt the quality of the underlying instruments or the stability and creditworthiness of their "producers" and hence no need to check and double check the flow of information on which these quasi-official assessments were based.

This radically changed in August 2007. Accustomed to an environment of calculable risk, financial agents suddenly found themselves unprepared for a situation of deep, ontological, uncertainty. The immediate effect was a return to well tried strategies to diminish uncertainty and find a new equilibrium between information requirements and information processing capacities. According to Joel Podolny, we have to distinguish between two types of social responses to the onset of market uncertainty (Podolny 1994). The first one is well known from earlier network theorists and has played an important role in the attempt to carve out a distinct niche for economic sociology vis-à-vis neoclassical economics, namely trust building and reproduction through reiterated exchange. Under conditions of uncertainty, agents restrict their scope of action to transactions with well-trying, trusted partners.

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The second one has received less attention in economic sociology and has to do with market reputation. Under conditions of uncertainty, reputation serves as a marker of trustworthiness that is functionally equivalent to the trust that is generated by reiterated exchange. As such, market reputation is especially important for less reputable agents who are “located” at a social, cultural, and territorial “distance” from the reputable agent in question, but who, because of increased contextual uncertainty, have a growing need for more and better guarantees of the trustworthiness of counterparties.

The credit crunch is an excellent example of a changing context, which has led to a general increase in the need for extra assurances of trustworthiness that fall outside the scope of the immediate observation capacities of agents. As a result of a sharp rise in cross-border financial transactions, many new financial players have simply found it impossible to assess the trustworthiness of counterparties using the well-tried techniques of repetition and proximity. Instead they have been forced to rely upon reputation. According to Podolny, the reputation effect is based on the particular way in which a field (or a market) is stratified, implying that agents predominantly prefer to trade with agents that are known to occupy the pinnacle of the market hierarchy.

In his 1994 study, Podolny demonstrated this effect through a case study of investment banking relationships. Podolny found that market reputation is a “positional good” (Hirsch 1976), or an intersubjective value that is attached to a relative position within a hierarchically stratified field. Market insiders determine the status of an agent on the basis of the relative status of its main exchange partners. In investment banking, the relative status of agents can be read off easily from the position of the name of the agent on so-called “tombstones”: that is, public announcements of the relative contribution of investment banks to structured loans or emissions that are published in the business press. According to Podolny this results in markets that are structured on the basis of status homophily, suggesting that markets with a high degree of uncertainty are hardly accessible to newcomers (Podolny 1994).

Newspaper reports of the credit crunch have amply demonstrated these two responses to uncertainty among financial agents. It was striking, for instance, that the immediate response of “bulge bracket” investment banks to the new condition of uncertainty was to cut off hedge funds and private equity funds from the existing circuits of capital. The “flight to security” that was caused by the credit crunch was in a very true sense also a “flight to familiarity”; traders and firms simply cut back on their

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interactions with “strangers” and newcomers and resorted to counterparties with whom they had long-standing trading relations. In a mere couple of weeks, Global trading networks were reduced to a core of long-established trading patterns in order to overcome information asymmetries and reduce paralyzing uncertainties.

Reputation too was in high demand, as is demonstrated by the growing market share of Goldman Sachs in the most important investment banking markets (M&A, IPO’s, and prime brokerage) as a result of the superior way in which it has weathered the credit crisis. However, as this example indicates, the status of financial agents appears to be highly dependent on their internal risk management procedures, implying that high pre-crunch reputations were no guarantee for good post-crunch performance. A case in point is the predicament of UBS. Highly esteemed for its successful integration of investment banking and private banking, it has become one of the main victims of the current credit crunch, earning it the moniker of “Used to Be Smart”. In other words, under conditions of high volatility reputation is no longer an anchor of stability, allowing agents to determine each other’s trustworthiness, but is subject to the same shifts and changes as wider market conditions, raising questions about its usefulness as a guide through uncertainty.

While the relative status position of agents is traceable through public manifestations in the form of credit ratings, quarterly reports, tombstones, and annual rankings and hence ought to be transparent for outsiders too, the huge investments in “bulge bracket” investment banks by Asian and Middle-Eastern sovereign wealth funds suggest that there are nevertheless different status perceptions by market insiders and market outsiders. According to Bloomberg the write downs and credit losses of banks as a result of the sub-prime mortgage crisis had added up to a sum total of \$232 billion in August 2008 (FT 2008). As a result banks have been forced to fund fresh sources of capital to shore up their tier 1 capital ratio. Right before the fall of Lehmann, banks had received a total of \$84 billion in capital injections, most of it from capital providers from South-East Asia and the Middle East. While the recipients are highly reputable banks such as Merrill Lynch, Citigroup, Barclays, UBS, and Bank of America, the fact that Western institutional investors shun the shares of these banks raises interesting questions concerning the distribution of reputation-related information. Apparently there is a certain time lag between different types of investors in their response to the ups and downs of reputations in volatile market conditions, suggesting the importance of direct linkages to the core of the financial market networks and indicating the relatively



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peripheral position within these networks of most sovereign wealth funds. Although it is fair to say that next time around that will probably be different.

A response to market uncertainty not discussed by Podolny but clearly relevant for an adequate understanding of the current credit crisis, is the complete breakdown of market exchange. Striking about what happened after the sub-prime mortgage crisis in the United States broke out, is the steep fall in the sale of securitized assets in both the United States and Europe, as is demonstrated in Tables 5.2 and 5.3. For some securitized asset markets this means a virtual disappearance. Apparently, uncertainty can reach such levels that liquidity dries up, resulting in an inability to determine prices or in erratic price formation, which in turn enhances the solvency problems of banks and sharpens the downward pressures on activity in financial markets that in a substantive sense have nothing to do with the valuation problems in the markets where the credit crisis originated.

### What are the spatial consequences?

Throughout this chapter I have suggested that the return of uncertainty might well mean a return of spatial proximity. While transparent markets can never be a-spatial, since in a deep sense every mode of social action takes place in a spatio-temporal “fluidium”, market contexts that are highly similar to spot markets and are hence built around transparent products whose trading is free from information asymmetries, generally lack the social structuring that is caused by “spatial variegation” (Brenner, Jessop, and Peck 2009). Here I play upon the distinction drawn by Andrew Sayer between space as “medium”, space as “effect”, and space as “cause” (Sayer 2000, 106–29). While ontologically speaking every social action has to occur within the medium of space, it is much rarer that space has an empirically identifiable causal effect on that action. That is to say, human action always has spatial articulations, but is only rarely causally determined by those articulations.

While this proposition has universal theoretical validity, geographers have so far failed to consider to what extent its validity is determined by contingent conditions. As this chapter has tried to argue, space is more causally relevant under conditions of uncertainty than under conditions of risk. In other words, it is the nature of the available information on which agents base their actions that determines to what extent space is

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merely a medium or has causal effects. The analysis given above indicates that conditions of risk generate different spatial patterns than do conditions of uncertainty. Under conditions of risk, information asymmetries are few and far between, are thus only of limited value to market participants, resulting in expanding trading networks and increasing reputational egalitarianism. Since all relevant information is immediately and equally available to all, in theory there can be no cognitive differences between agents and hence there is no need for extra-market guarantees. Of course, this is a verbal description of the empirical implications of the mathematical assumptions of Efficient Market Theory and hence an idealized description of the financial markets up to July 2007. Nevertheless, by and large financial agents and markets functioned as if the description was empirically adequate, lending a large dose of empirical validity to MacKenzie's performativity thesis.

However, since August 2007, space has become causally relevant again. The drying up of markets has clear spatial consequences in the sense that it has resulted in a diminished accessibility of financial markets for marginal and peripheral agents, suggesting that trading relations are once again determined by the locality of the counterparty. Striking is the indirect spatial effect this has had on the investment strategies of the most nimble financial players around, namely investment banks, and the investment banking units of commercial banks. The drying up of markets in the core regions of the world has led to a significant shift of resources and capital to newly arising investment banking markets in South-East Asia and South America. Many investment banking units now have just as many high ranking officers in Asia as they have in Europe and the United States, and we are still counting, suggesting a long-term structural economic power shift to what used to be described as the "periphery" in Wallerstein's World Systems Theory (Wallerstein 1974; see Mahbubani 2008).

The increased functionality of network generated trust to overcome the insecurities of uncertainty too has spatial consequences, which feed back into the market structure and can hence be said to have spatial effects. If we limit our analysis to investment banking, the credit crunch is pushing the remaining investment banks from "transaction banking" back to the earlier business model of "relational banking" (Augar 2005; Knee 2006). This can be seen to strengthen the importance of historically vested relations between banks and bankers and hence of proximity for the enactment of financial transactions. Of course, due to modern transportation and ICT, proximity does not automatically entail co-location, but it does denote the salience of physical interactions in order to have access

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to extra-economic sources of information on the trustworthiness, cognitive capacities, and risk assessment qualities of counterparties.

Finally, the importance of reputation under conditions of uncertainty too appeared to be clearly spatially determined, albeit in a rather paradoxical way. That has to do, first, with the functional equivalence of reputation-effects to proximity-based trust, which is especially useful for peripheral agents who are at a distance from the core of financial market networks. So, although reputation works across space, its increasing salience under conditions of uncertainty indicates a financial field that is itself spatially structured. Second, there appears to be a delay in the speed with which new information affecting the reputation of agents gets digested by counterparties. That is to say, the field of finance is hierarchically stratified, implying that reputational damages at the top reach agents located at the base last. The massive way in which peripheral sovereign wealth funds have invested in endangered American and European banks suggests that they have based their decisions on the reputations of yesterday and have failed to factor in more recent information about the extent to which these banks have been implicated in financial innovations gone sour.

In a more theoretical vein, the analysis presented in this chapter suggests strong similarities between the research agenda's of network theorists and financial geographers. Both aim to determine the importance of social and hence spatial structuring for the functioning of markets, without claiming, however, that that is all there is to know. While it is obvious that every economic action is simultaneously social, in a theoretical sense this is not a very illuminating proposition. What we need to know is under which conditions socio-spatiality is causally relevant and under which conditions it is merely a medium of articulation. Using the latest research from economic sociology and geography this chapter has tried to provide a tentative question to this question for the highly complex, immensely fascinating, and morally extremely ambiguous field of finance.

### Note

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## Author Queries

- AQ1: Year modified as per the reference list. Please check.
- AQ2: Unlisted reference. Please check.
- AQ3: Please provide expansion for "ICT" if appropriate.
- AQ4: Year modified as per the reference list. Please check.
- AQ5: Not listed. Please check.
- AQ6: Unlisted reference. Please check.
- AQ7: Unlisted reference. Please check. (MacKenzie 2007)
- AQ8: Year modified as per the reference list. Please check.
- AQ9: Please update.
- AQ10: Uncited reference. Please check.
- AQ11: Uncited reference. Please check.
- AQ12: Uncited reference. Please check.
- AQ13: Uncited reference. Please check.
- AQ14: Uncited reference. Please check.
- AQ15: Uncited reference. Please check.