Configuring Financial Markets

Rethinking Financial Markets: Social Capitalism, Economies of Money, and Custodial Regulation
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We are caught between those who celebrate financial markets and calculative agents and those who denounce them. Many economists are in the former camp; many social scientists in the latter. This paper begins with a conclusion: "a pox on both your houses." Financial markets and calculative agents are not natural, as that term is generally applied. And they certainly are not just human creations or embedded in society. Financial markets and calculative agents exist because they are formatted and constructed (performed, to use Callon's term) in the ongoing interactions by which all collective existence (all living together) is made. Financial markets and agents are very real but for reasons that have been seldom examined or even talked about. Callon contends that primarily disciplinary economics produces markets and the calculative agents that inhabit them. That is one of the things I will consider in this paper. But I will also follow Callon's advice to "...explore the diversity of calculative agencies forms and distributions, and hence of organized markets. ... [the market] is a many-sided, diversified, evolving device which the social sciences as well as the actors themselves contribute to reconfigure."[1] The central question is how are calculative agencies equipped, by economics and otherwise to carry out their calculations and thus establish the markets we see every day?

A couple of preparatory items before I begin. First, financial markets are agents, just like the traders, back office, mid-office, regulators, credit raters, etc. which are associated with these markets. They are all agencements[2] (arrangements), not individual "naked" traders, raters, regulators, etc. Second, there is no distinction (ontologically) between human and nonhuman agents. They are all agencements.

First, let's consider some of ways mainstream disciplinary economics contributes to building financial markets. Increasingly, amongst financial agents' "equipment" are theories, concepts, data sets, procedures, algorithms, etc. from economics.

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[1] Callon, Michel (ed.) (1998) *The Laws of the Markets*, Oxford: Blackwell, p. 51.

[2] Agencements designate socio-technical arrangements when they are considered from the point view of their capacity to act and to give meaning to action. Callon, Michel. WHY VIRTUALISM PAVES THE WAY TO POLITICAL IMPOTENCE: A REPLY TO DANIEL MILLER'S CRITIQUE OF *THE LAWS OF THE MARKETS*. *ECONOMIC SOCIOLOGY, European Electronic Newsletter* Vol. 6, No.2 (February 2005), p. 4.

Much of the mainstream economic theory seems to assume that economic agents are successful optimizers, consciously or unconsciously guided by the invisible hand. But economists also observe that even were this not the case, competition and survival of the fittest may, in the long run, often give financial agents no choice. Financial markets seem to reflect both the push to optimization and the invisible hand from economics, but at the same time accept that interactions in financial markets are "kill-or-be-killed" competitions with few limits. Financial markets also use economic theory to justify such brutal competition by insisting that the relentless competition serves the interests of private market participants which in turn improves the efficiency of the markets and thereby serves the general welfare of all agents.

In a similar vein is the efficient-market hypothesis: the proposition that prices in financial markets "always 'fully reflect' available information." [3] University of Chicago economist Eugene Fama invented the hypothesis which became the centerpiece of modern financial economics: "I believe there is no other proposition in economics which has more solid empirical evidence supporting it than the Efficient Market Hypothesis."[4] The efficient-market hypothesis is not simply an analysis of financial markets as "external" things but has become woven into market practices. Most important, it helped inspire the establishment of index-tracking funds. Instead of trying to "beat the market" (a goal that the hypothesis suggests is unlikely to be achieved except by chance), such funds invest in broad baskets of stocks and attempt to replicate the performance of market indexes such as the S&P 500.

That optimization, the invisible hand, and efficient markets often fail or never existed to begin with does not reduce their importance in arrangements that make up financial markets.

Economics also arranged financial markets through somewhat more specific procedures, algorithms, and data sets. Economics contributed net present value (efficient discounting) into the financial markets stew. This addition took somewhat more time (four centuries) and a more circuitous route to enter financial markets. Today discounting future cash flows in financial markets is routine. No investment decision would be made without such calculations.

Economics brought portfolio practices and methods, options algorithms and methods, econometric forecasting, and marginal analysis into financial markets. On the regulatory front for financial markets economics brought in pure Ramsey pricing, several types of constrained market pricing (the most recent fad in that direction being dynamic pricing), and cost/benefit analysis.

Portfolio practices/methods and options algorithms/methods have a particularly high profile in financial markets. A basic question in financial markets is what to do with the money? Financial agents must purchase a collection of stocks, bonds, derivatives (of several types) and trade these with other financial agents. This process is largely shaped around portfolio practices and methods, and options algorithms and procedures. William F. Sharpe set about measuring the riskiness of a pair of assets, securities in financial markets for example. He dealt with the matter

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[3] Fama, E. F. 1970. "Efficient Capital Markets: A Review of Theory and Empirical Work." *Journal of Finance* 25:383–417, p. 383.

[4] Jensen, M. C. 1978. "Some Anomalous Evidence Regarding Market Efficiency." *Journal of Financial Economics* 6:95–101, p. 95.

through each security's covariance with the market portfolio. This is the famous capital asset pricing model in which a security's covariance with the market, the *beta* coefficient, serves as a general-purpose measure of the security's risk. Today there is hardly a firm dealing in securities that does not know about the *beta* or does not gather statistics on this coefficient. Many stock market information services, for example, *Value Line*, publish the measured *beta* coefficients for all firms they list. Clearly, the *beta* coefficient has become a standard tool of professional and not so professional stock and securities traders. Less than a decade was required for the transfer of this concept from economic theory to practice.

Options pricing procedures and algorithms are another very precise and detailed contribution of the discipline of economics to financial markets' look and functioning. Options are a major device in the operations of financial markets. Option is a contract that gives the right, but not the obligation, to buy ("call") or to sell ("put") a set amount of a given asset at a set price (the "strike price") on, or up to, a given future date (the "expiration"). The major question is how to set a price for an option? Out of this ongoing construction of options pricing the work of Fischer Black and Myron Scholes appeared, along with significant input from Robert C. Merton. Between 1968 and 1970 they invented the Black-Scholes equation:

$$\partial w/\partial t = rw - rx\partial w/\partial x - 1/2\sigma^2 x^2 \partial^2 w/\partial x^2$$

w is option price, x is stock price, σ is volatility of stock, riskless rate of interest, and t is time; stock pays no dividends. Characteristics of option enter as boundary condition. Volatility: the extent of the fluctuations of the price of an asset, conventionally measured by the annualized standard deviation of continuously-compounded returns on the asset. Riskless rate: the rate of interest paid by a borrower who creditors are certain will not default. The financial markets of the last forty years could not have, would not have existed but for the Black-Scholes equation. According to the former counsel of the Chicago Board Options Exchange:

> Black-Scholes was really what enabled the exchange to thrive. ... [I]t gave a lot of legitimacy to the whole notions of hedging and efficient pricing, whereas we were faced in the late 60s-early 70s with the issue of gambling. That issue fell away, and I think Black-Scholes made it fall away. It wasn't speculation or gambling, it was efficient pricing. I think the SEC [Securities and Exchange Commission] very quickly thought of options as a useful mechanism in the securities markets and it's probably – that's my judgment – the effects of Black-Scholes. I never heard the word "gambling" again in relation to stock options traded on the Chicago Board Options Exchange.[5]

The Black-Scholes equation is based on some clear assumptions (theory). The equation assumes that a stock price fluctuates log-normally (with a fixed level of volatility); that the stock can be bought or sold at any point in time without incurring transaction costs or causing market prices to

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[5] As quoted in *Is Economics Performative?* On the Performativity of Economics. 2007. Edited by Donald MacKenzie, Fabian Muniesa & Lucia Siu. Princeton University Press. Chapter 3, Donald MacKenzie, "Option Theory and the Construction of Derivatives Markets," page 59.

move; that the stock "pays no dividends"; that options are "European;" that money can both be borrowed and lent at an identical, constant "riskless" rate of interest; and that short selling (sale of a borrowed asset) incurs to financial penalty.[6] Given these assumptions they demonstrated it was possible to construct a portfolio of an option and a continuously-adjusted position in the underlying asset and lending/borrowing of cash that was riskless: changes in the value of the option would be cancelled out exactly by changes in the value of the position in the asset and cash. Since this perfectly hedged portfolio was riskless, it must earn exactly the riskless rate of interest. If not, there would be an opportunity for arbitrage: a way of making a profit that demands no net outlay of capital and involves no risk of loss. Such an opportunity could not persist: option prices would adjust so that it disappeared.

Those following Black-Scholes suggest that price movements have a form. That form is what statisticians call a "random walk": the change in the price of a stock could be viewed as a random (probabilistic) variable, the distribution of which in any given time period was independent of its changes in previous time periods. There is not agreement on the precise statistical form of the distribution. But one form increasingly was regarded as canonical, the log-normal distribution. In other words, the logarithms of stock price changes were modeled as following the normal distribution, the well-known "bell-shaped curve" of statistical theory.

Now perhaps you can understand why the Black-Scholes equation with its underlying theory no longer fits and can longer be used in current financial markets. Prices in these markets are not random walks. Stock prices do not fluctuate log-normally (with a fixed level of volatility); stocks cannot be bought or sold at any point in time without incurring transaction costs or causing market prices to move; stocks do "pay dividends"; options are not "European"; money cannot be both borrowed and lent at an identical, constant "riskless" rate of interest; and short selling (sale of a borrowed asset) incurs noticeable financial penalties. The bell-shaped curve is out the window because actors and actions have constructed markets beyond its reach. This is a valuable lesson for us. All versions of financial markets eventually fail. The other point to stress is that the tools and theories of financial markets are co-constructed with the markets themselves. They cannot be disentangled. And that co-construction is always happening.

Business Schools, particularly at American universities and MBA educators have also contributed important elements to financial markets. Rakesh Khurana, a professor at Harvard Business School and author of "From Higher Aims to Hired Hands," a historical analysis of business education asserts "A kind of market fundamentalism took hold in business education. ... Instead of being viewed as long-term economic stewards managers came to be seen as mainly as the agents of the owners — the shareholders — and responsible for maximizing shareholder wealth," and nothing else.[7] Even if this changes as ever more blame for the current economic crisis is placed on MBA programs and business education, still graduates of MBA programs and the "case studies" from those programs will continue to guide the singular focus on maximizing short-term money accumulation of financial markets.

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[6] Black, Fischer, and Myron Scholes. 1973. "The Pricing of Options and Corporate Liabilities." Journal of Political Economy 81:637-654, page 640.

[7] *New York Times*. Kelley Holland. "Is It Time to Retrain B-Schools?" March 15, 2009.

Business education and MBA programs have also contributed more detailed processes, procedures, methods, and algorisms to financial markets. Business schools were the source of the theory of shareholder maximization.[8] They originated the idea of using derivatives and credit swaps to manage risk, and the idea that managers are so fundamentally self-interested that they can't be trusted to do their jobs unless they're provided with huge stock options. MBA programs teach simplified and not necessarily accurate models of human behavior that over time become self-fulfilling. Over time MBA students took on the model, the model that being self-interested to an extreme was the appropriate way to behave and act. MBA students come to accept that in order to be a professional manager they must adopt this model. In terms of management the MBA turned the world upside down. Throughout the history of American business management was a practice, a craft that was learned on the job and was based in what Jeff Immelt, Chairman and CEO of General Electric calls "domain knowledge."

MBA programs destroyed all this, virtually single handedly. Their explicit goal was to produce "professional managers" who could successfully manage anything – large company, small company, government, charity, university, health care, armies – anything! And because this manger could manage anything successfully s/he was a member of an elite group that could and should bypass ordinary channels of promotion based on merit and need not feel compelled to comply with the wishes of democratically chosen actors in businesses or government. But the MBA also taught that society and community both did not exist and did not matter. Thus they were free to take any actions necessary in managing a business to maximize both shareholders' and their own compensation. But often in practice MBA managers could not help placing themselves ahead of shareholders in compensation, since they also had been taught that satisfying their own self-interest came first and that their just compensation should be virtually boundless. These practices by MBAs often lead to less productive and effective companies, that expected ever larger profits, but with a large share of employees feeling mistreated; declines in democratic government; and an increase in ineffective policies, confusion, and tension all round.

When you apply these insights to such companies as Enron, Chase, or Goldman Sachs it's easy to see how and why things got out of hand. If you don't possess domain knowledge, how do you run a company? You do it through the accounting department. You study the books. Managers of divisions who sales go up are promoted. Mangers of divisions whose sales go down are not promote or are let go. This is running a company through the accounting department. Now this leads at once to the manipulation of both underlying activities and figures. As Marianne Keller notes in here biography of General Motors, the object in General Motors after the arrival of this new concept of management was to improve the numbers, not to improve the product. This became a common theme in the whole of American business, particularly in the 1980s and the 1990s. It's what happened at Enron, where they took their debt off the main balance sheet and

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[8] In the strategic management literature, Woolridge and Snow (1990) assessed stock market reactions to investment decision. They presented the *Shareholder Maximization Hypothesis* that stated "the stock market will react positively to corporate announcements of strategic investment decisions" (p. 354). These investment decisions are "major commitments of current resources made in anticipation of generating future payoffs" (Woolridge & Snow, 1990, p. 355). Wooldridge, J. R., & C. C. Snow. (1990) "Stock Market Reaction to Strategic Investment Decisions." *Strategic Management Journal*, 11: 353–363.

stuck it into a subservient balance sheet, so the interest costs would not weigh down earnings. So first of all, you find the manipulation of the events underlying the figures to achieve the right figures and then you have of course the manipulation of the figures ending up in fraud. So improving the numbers not the product is one of the primary characteristics of the new age of management as a profession. Another characteristic is oversimplification, especially by using mathematics and simple laws or rules that supposedly explain everything (e.g., the only motive for humans is self-interest, being decisive is more important than knowledge). A third characteristic is companies run by narcissists, self-confidence. In fact MBA programs work hard to instill such uncritical confidence. These managers thus are certain they know what the right answer is 100% of the time, and that people who share such confidence are most likely to rise to the top of organizations.

Financial market agents are the current step in this process. Critics of MBA programs and American business education say they are the current step because all the steps before them have failed and plus financial markets in a very real sense now control all the other markets. And after all this means financial markets now control all the money on the table. If banks want to make loans and control interest rates to control their future fate, financial markets want unlimited types and amounts of securities that can be invented and sold, and mathematical and other techniques and procedures to predict securities' prices and to keep out agents not fluent in these algorithms and procedures.