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**Enterprise Risk Management in
Financial Intermediation: Hysteresis,
Exegesis and Eisegesis**

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“Every insurance contract and guarantee includes a moral hazard you cannot see.”

– *Anon.*

Hardly a week goes by that we are not reminded of the power of Enterprise Risk Management (ERM) as a “big idea.” The Fukushima Daiichi nuclear calamity may be too recent for mature diagnosis, but deficiencies in risk management seem likely to play a non-trivial explanatory role when the dust settles.¹ To be sure, even the most assiduous ERM program could not have neutralized the 9.0 Richter Scale earthquake or the ensuing 15 meter tsunami, but of course that is not the point. TEPCO’s own accident-management protocols stipulated that: “The possibility of a severe accident occurring is so small that from an engineering standpoint, it is practically unthinkable.”²

ERM is the discipline to remain vigilant and ever mindful of the unthinkable. Again, according to a TEPCO executive, “The disaster plan didn’t function.” “It didn’t envision something this big.”³ And, from the government’s Nuclear and Industrial Safety Agency, “We are painfully aware the plans were inadequate.”⁴ Following the staggering loss of life, property, and reputational capital came the hospitalization of TEPCO’s president, Shimizu, for symptoms of stress. He was replaced by his predecessor, the 71-year-old board chairman, Katsumata, suggesting a failure of succession planning—another facet of ERM.⁵

ERM may only be the latest acronymic infelicity spawned by consultants. Like TQM, an obvious comparator, it embodies a certain ambiguity that lends it gravitas, even as it frustrates

¹ Japanese Plant Had Barebones Risk Plan.” The Wall Street Journal. 3/31/2011 (http://www.democraticunderground.com/discuss/duboard.php?az=view_all&address=102x4794533)

² Ibid.

³ Ibid.

⁴ Ibid.

⁵ “At Utility, a Leadership Vacuum.” Norihiko Shirouzu, Mariko Sanchanta and Kana Inagaki. Wall Street Journal, 3/31/2011 (<http://online.wsj.com/article/SB10001424052748704559904576231742989493576.html>)

the pursuit of precision. But, then ERM is an emerging synthesis of more seasoned ideas with novelty deriving from its comprehensive embrace. If it follows a developmental path like that of big ideas of the past, ERM will be refined as its adoption spreads, and it will eventually be absorbed as accepted management practice while surrendering its *sui generis* identity. But as of the moment, ERM is an amorphous body of ideas awaiting formalization, quantification, adoption and validation in practice.⁶

At its most fundamental level, managing enterprise risk (ER) derives its ambiguity from imprecision in our working definitions of risk. I needn't labor the point with this audience: risk is one-tailed or two-, Gaussian or fat-tailed, volatility or VaR, and as the Germans say, *u.s.w.* And, if risk is not well defined, what of ER? If we lack formulaic precision, we can speak with some authority of intent and attributes. ER speaks to sustainability, and at its core is both integrative and strategic by virtue of its unblinking focus on physical and moral hazards that pose existential threats to the organization and its strategic intent.

In practice, ER is neither exhaustive nor comprehensively aggregative. There are many day-to-day risks the enterprise manages that do not credibly threaten its viability. Financial exposures are routinely hedged, machines are tested and lubricated, and safety of individuals is protected. None of these hazards is necessarily life threatening. Hazards that pose an existential threat are of a special type in that they are infrequent, or at least irregular, in occurrence and are therefore imprecisely measured. Their inconsistency gives rise to an idiosyncratic tendency to ignore, or even deny, their existence. Hazards with horrific outcomes, especially when accompanied by infinitesimal probabilities, are not only odious to contemplate, but they are also devilish to estimate. Consequently, these are risks that tend to be overlooked. Herein lies the

⁶ See "Fall Guys: Risk Management in the Front Line, Economist Intelligence Unit, Posted Nov. 18, 2010. <http://www.businessresearch.eiu.com/fall-guys.html>

behavioral side of ERM and the most basic motivation for formalizing the management of ER:

ERM is a process, and effective ERM is all about process integrity. Thus we can think of ERM

ERM. Finally, I offer some thoughts on the importance of process integrity and the potentially accretive aspects of ERM.

Hysteresis

The tsunami-like volume of publication, largely professional as opposed to academic, on ERM has seen relatively little attention directed toward explaining the origin of this “big idea.” Like its predecessors such as TQM, agency theory, pay-for-performance, option pricing and VaR, ERM is likely to be oversold in its current formative stage, and will ultimately be absorbed as part of conventional wisdom as it meanders along its concave developmental path toward maturity. Note that ERM is still inchoate, dating to around Y2K. It is also simple in conception—i.e., risks must be aggregated to be well controlled. If not, risk management remains a fragmentary and siloed affair and important hazards may be ignored along with co-variation among risks.

ERM is notable for its recognition of previously ignored hazards and opportunities, but it also is considerably less nuanced than say, TQM or option pricing. The more serious challenge of ERM resides in its implementation, rather than its conceptual formulation. Sullivan’s famous admonition about the devil residing in the details is relevant.

Most writers on the subject trace ERM to siloed efforts at risk management and in particular, to the purchase of property and casualty insurance. Life insurance might be added as well. Dickson traces these roots back to the fourth decade of the 20th century.⁹ But, if siloed risk management is the precursor of ERM, antecedents trace back to the 15th century use of letters of

⁹ Gerry Dickinson. “Enterprise risk management: its origins and conceptual foundation. Geneva papers on risk and insurance, 26(3):360-6 (July 2001).

credit in Italian banking. Subsequent trading of commodity and financial futures and options likewise pre-date the 20th century.

The nomenclature of ERM also is a bit of a puzzle. How “integrated risk management” morphed into “enterprise-wide risk management” and finally into ERM is clouded. One can, however, easily imagine that the ERM designation bears some connection with the emergence of enterprise software as purveyed by SAP, PeopleSoft and others in the 1980s and 90s. These systems were sold as indispensable owing to their comprehensive integration, and it seems quite natural for the argot of these widely used computer-based accounting systems to have been appropriated in the dialogue of risk management, especially since accountants were prominent in the earliest efforts to formalize ERM.

If ERM recognizes that a siloed approach to risk management exposes the organization to potentially fatal errors of omission, the implementation of an “integrated” approach to risk confronts serious practical challenges. Obviously, some kind of aggregation, allowing for covariation, is called for, but risks are both “known” and “unknown,” arrive *in seriatum*, are both qualitative and quantitative, and therefore the ideal of summation defers to a more workable definition, i.e., those discernible risks that pose an existential threat to the organization or its mission. Thus, we often see ERM discussed in terms of the sum of all risks, but in practice, ERM focuses on a finite number of hazards that rise to the level of existential threats. This inability to identify an appropriate summation operator has given rise to a popular if trivial debate as to the appropriate definition of ERM.

If ERM is the replacement of a fragmentary approach to risk management with a more comprehensive, integrated one, there remains the question as to why now? After all, the notion of a risk portfolio is more than a half century in age. The period dating back to the mid-1980s

may well come to be identified as the Age of Risk Management. The development and spread of financial derivatives, most especially options, swaps and securitization revolutionized financial markets. New opportunities for risk management were accompanied by new hazards. The recent discovery of the shadow banking system was enabled by these new financial instruments each of which produced opacity owing to inherent complexity and immaturity.¹⁰ Thus, financial innovation introduced with seemingly increasing frequency facilitated the ever more granular parsing of cash flows and risks, enabling more nuanced and precise financial management, but increasing complexity was an inescapable accompaniment. And the complexity led to more asymmetrically informed trading environments where originators and traders enjoyed more advantageous trading positions *vis à vis* investors. The sheer magnitude of the markets spawned by these new financial instruments suggests their profound and pervasive impact. Mortgage-based securities essentially replaced the savings loan industry that imploded in the 1990s. The credit-default swap market alone reached the nominal size of \$60 trillion before shrinking by half during the Great Recession. Currency and interest rate swaps were larger yet, running to hundreds of trillion of dollars in nominal value. Financial options and futures markets spread globally. The revolution in finance supported financial leverage, global trade, expansion of credit markets, regulatory circumvention and increased frequency of trauma and collapse. This was the brave new world of Mandelbrot's fat tails and Taleb's Black Swan.

Clearly not every business and market failure of the period was traceable directly to innovations in finance, but even in cases like Enron and Madoff, where egregious dereliction and fraud seemed to play a major role, we find that exotic finance was supportive. Too, the globalization of goods markets was importantly supported by currency and interest rate swaps and extended supply chains gave rise to increasing counterparty risks. The Boeing Dreamliner

¹⁰ Slapped By The Invisible Hand: The Panic of 2007. Gary B. Gorton. Oxford University Press, 2010

illustrates how the desire to spread development costs can lead to new forms of operational and counterparty risks emanating from elongated supply chains.

Coupled with rampant financial innovation and global market integration was a *zeitgeist* that supported deregulation. Gramm-Leach-Bliley legislation superseded the 1930s Glass-Steagall Act that had separated commercial and investment banking in the U.S. There was irony in rediscovering Glass-Steagall in the guise of the Volcker Rule. A generation was raised on the idea that Glass-Steagall was misguided since the Great Depression was attributable to monetary policy mistakes. Gramm-Leach-Bliley finally corrected the Glass-Steagall blunder permitting the formation of financial behemoths like Citigroup, Bank of America and other financial institutions built on virtually unrestricted spatial and functional agglomeration. Then too, investment banks were liberated in the '90s from gearing restrictions. Financial leverage quickly rose by four to five times as investment banks warehoused the unrated junior tranches of their sub-prime mortgage securitizations.

The financial giants gave new meaning to “too big to fail” and “too complex to fail.” More thoughtful and disinterested observers asked if these institutions along with Goldman Sachs, Morgan Stanley, Freddie-Mac and Fannie Mae, AIG and their European and Asian counterparts had not also become too big and complex to manage. Those charged with ERM were perhaps best positioned to appreciate and give voice to such skepticism.

Emerging from these thoughts was the idea that institutional failures, most especially those that made claims on public resources, were too often reflections of public company governance failures traceable to derelictions in the realm of risk management. Boards of directors were either distracted or conflicted. The introduction of the good faith standard in the 1990s can be seen as an effort to elevate fiduciary standards of care and loyalty. Sarbanes-Oxley

legislation, especially section 404 on internal controls, can likewise be seen as a tightening of fiduciary standards of care. Dodd-Frank carries this effort to a still higher plane.

ERM, when considered in this context, seems little more than a mandate to keep existential risks on the agenda of the board of directors. It can be seen as a corrective for the all-too-human tendency to overlook tail risks, or alternatively as an elevation of fiduciary standards of care. But if tail risks tend to be under-appreciated, risk was being mispriced and a more meticulous approach to ERM could produce sounder decisions. This permitted management and boards to frame ERM as potentially accretive and not merely an expense inflating exercise in compliance.

Exegesis

The essential idea of ERM is found in its integration of diffuse and disparate, but ultimately linked hazards facing the organization. And, even if the complexity of the system forces the analytical convenience of limiting attention to that sub-set of hazards with independent existential implications, risks are sufficiently diffuse to challenge the brightest among us. There are physical and moral hazards, there are qualitative and quantitative risks, there are one- and two-tailed risks, there is Knightian risk and uncertainty, there is error and fraud, there is operational and financial risk, and these distinctions go on virtually endlessly. Risk taxonomies are almost as numerous as risk analysts. And, each of these taxonomies was created in order to illuminate, not to obfuscate. Each provides a perspective on a richly multi-faceted phenomenon, a mosaic, a complex system, we are most unlikely to unravel deductively. It is a domain best suited to computer simulations and nuanced conjectures with all that implies.

Thus, I modestly offer one more perspective that I believe has some novelty and is especially powerful when brought to bear in the world of financial intermediation. None here need to be convinced that risk management is something more than risk mitigation. However, it is precisely this idea that I wish to examine. In what sense is risk management something more than mitigation?

Financial intermediaries are organizations that assemble skills and resources that enable them to process risks at lower cost than their clients. And it is this core competency that permits these institutions to earn profits. Indeed, it is the precise category of risk for which the institution possesses a core competency that defines the intermediary. For example, those intermediaries that specialize in processing mortality and morbidity risk we refer to as life insurance companies. Those that specialize in processing credit risk, we refer to as commercial banks. In general, financial intermediaries can be defined as enterprises possessing a core competency in processing a specific type of risk, and processing, as I use the term, subsumes pricing, servicing, warehousing, redistributing, or even transforming risk in some nuanced fashion.

In processing these specialized risks, financial intermediaries cannot avoid related ancillary risks for which the enterprise possesses no special competency. For example, the commercial bank that can profitably warehouse selected credit risks may possess no special competence in processing interest rate and currency risk, management succession, macro-economic trauma or employee fraud. Thus, in thinking about ERM in insurance, or more generally in financial intermediation, there is an initial distinction to be drawn between core and ancillary risks. Core risks the organization seeks to augment, selectively to be sure, but ancillary risks are a costly drain on organizational resources and these are to be mitigated whenever reasonable terms for doing so are available. Otherwise, ancillary risks will absorb scarce

financial and human capital of the enterprise that could otherwise be deployed in the profitable acquisition of core risks. This distinction between core and ancillary risks clarifies the distinction between risk management and risk mitigation while also suggesting fundamental differences in the approaches to managing the risks in these two categories. Taxonomy matters, as will become apparent.

Commercial bankers do not indiscriminately warehouse credit risk any more than life insurance companies passively accept mortality exposure. However, both ultimately measure their success in terms of the volume of such core risks they process and/or absorb. The greater the volume of core risks that they can evaluate, price, absorb and administer, or purchase for profitable resale, the greater their profits and ultimate success. They do this marketing, sorting, pricing, contracting, administering and reselling using financial, physical, informational and human capital all of which are more or less fixed at any moment of time. The fixity of equity type capital and specialized human capital are especially critical. The former is used to absorb losses and therefore forestall receivership and the latter is critical in controlling core risks as in the pricing of life insurance and the design and monitoring of credit contracts.

In the realm of core risks, risk management is all about scalability. And, scalability refers to the ability to successfully accommodate demand shocks, both positive and negative. This means being able to augment specialized skills and equity capital (hybrid capital and debt may be important as well) at marginal costs that do not rise unduly in the face of increased demand for the enterprise's services. Symmetrically, on the negative side, risk management involves controlling the costs of redundancies.

A good bit has been written about the agile and resilient firm and the learning organization. For example, I interpret the works of Peter Senge and Yossi Sheffi as guides to

achieving operational flexibility without sustaining extraordinary costs. Their work captures the essence of ERM as applied to core risks. They are all about the purchase of real options that permit the future purchase of critical factors of production under conditions of stable marginal cost. One can think of the enterprise facing a family of possible supply curves one period hence, and the more one is willing to spend (invest) presently, the lower that cost curve is apt to be. Risk management is then the judicious and costly choice of future cost curves. But it is also the acceptance of certain immediate costs in order to reduce prospective costs. It is essentially the purchase of a call option.

In the realm of human capital, the costs might include those of succession planning, morale-building, executive development efforts, worker benefits and the maintenance of excess capacity. Why do firms strive to be recognized as attractive employers? Presumably, current workers offer greater effort per unit of cost, but prospective workers will do so as well. With regard to managing the availability of financial capital, risk management might include investor relations, dividend (buy-back) policy, transparency of financial reporting. All of these measures are internal to the firm and involve increased operating costs. Even when banks securitize or syndicate loans or when insurance companies reinsure to conserve financial capital, there remains a need for augmented human capital to service the product. To be sure, the mix of human and financial capital is altered, but operational flexibility remains the challenge.

Indeed, practices such as syndicated lending, securitization and reinsurance should be seen as more than diversification initiatives. They are more fundamentally an effort to enhance flexibility when financial and human capital are available on very different terms at the margin. In other words, if financial and human capital implausibly were available on *pari passu* terms, we would expect to see much less redistribution of the warehousing aspect of intermediation.

Thus managing core risk is basically the control of operating costs in the face of demand uncertainty. It is the management of real options in the sense that it involves the acceptance of certain and immediate costs in an effort to achieve flexibility and therefore reduce prospective operating costs, given the uncertain future demand for the intermediaries' services. Demand may increase or decrease and you would like to be able to adapt to the new reality without sustaining extraordinary costs. From this perspective, core risk management can be seen as an effort to smooth earnings, but it is also countervailing to any short-term bias in decision making.

Ancillary risks are quite another matter. These are the risks that inevitably accompany core risks, but for which the enterprise possesses no special competency. They include the interest rate risk that accompanies credit provision at commercial banks. Likewise, they include the foreign exchange risk that accompanies property, casualty, and mortality risks of globally diversified insurance companies. Also typically found in this risk category are employee fraud, *force majeure*, sovereignty, and regulatory risks, *u.s.w.*

Any firm concerned about sustainability will need to manage these risks along with core risks and this management will unavoidably mean the absorption of human and financial capital that could be profitably be redeployed to processing increased amounts of core risks. Indeed, the well-managed intermediary will be attentive to the cost of ancillary risk accompanying its various opportunities for processing core risk. It will naturally prefer those core risks that are least encumbered, but there are none that come without ancillary risk entailments. It is always a matter of degree as we revisit Sullivan's insight.

Since the firm possesses no core competency in processing ancillary risk, there is no profit in processing these risks. Indeed, since these risks divert financial and human capital, they can be seen as profit impairing. Therefore, this is the domain where mitigation efforts are

paramount. Moreover, these mitigation efforts characteristically involve risk shifting, and the instruments employed are typically financial. These include financial derivatives such as options, futures, swaps, and securitizations. In addition, property and casualty insurance should be considered as ancillary risk ameliorators. Here we have cat-cover policies, all manner of physical hazard protectors, directors and officers, and errors and omissions policies. All of these are purchased to export ancillary risks and free critical financial and human capital to support core risks.

To be clear, this same suite of instruments may be used to offload core risks when the capacity to originate exceeds the capacity to warehouse. But the distinction is that warehousing core risks can be profitable whereas warehousing ancillary risks never is. Ancillary risks are warehoused only in those instances where there are no principals in the market with a core competency in processing the ancillary risks in question. The role of risk markets is the redistribution of risks from those for whom they are ancillary to those for whom they are core. But not all risks have a market and perhaps more basically there are ancillary risks for which no intermediary possesses a core competency.

Thus, certain ancillary risks are internalized of necessity. And of this sub-set of ancillary risks for which active markets are absent we find some are tolerated and others are not. Enterprises choose not to be in certain lines of business, precisely because the ancillary risks are categorically unacceptable. ERM, when done well, provides the discipline to control being unwittingly drawn into activities where the hazards are intolerable.

Eisegesis

Big ideas motivate change, profound change, pervasive change, durable change. For example, TQM gave rise to lean manufacturing, employee empowerment, distributed decision making, information sharing, six sigma and a serious challenge to traditional leadership styles. TQM was a response to the relative decline in American industrial ascendancy. Deming's tome was entitled *Out of the Crisis*. American business was embarrassed by the advanced engineering and management savvy of the Japanese to whom Deming was a great hero. Initially rejected in the U.S., Deming brought the message of Kaizen back to a belated welcome in the U.S. from where these techniques subsequently spread worldwide.

Similarly, ERM arose phoenix-like, from the ashes of failure of the U.S. savings and loan industry in the 1980s and '90s through the calamities of Enron, Worldcom, Tyco, HealthSouth, Parmalat and then on to the bitter fruits of the Great Recession.

The motivations for ERM were both voluntary and involuntary. The latter included Sarbanes-Oxley legislation which strengthened internal controls and compelled CEOs and CFOs to sign financial statements elevating their liability for accounting misstatements. Dodd-Frank legislation added further pressure by requiring the newly created Financial Stability Oversight Council to "make recommendations to the Board of Governors [of the Federal Reserve] covering the establishment of heightened prudential standards for ... overall risk management..." for both large banks and non-bank financial institutions. A third force promoting ERM was the heavily criticized credit rating agencies, especially Standard and Poor's which introduced ERM as a new rating criterion.

Thus, ERM became a compliance issue with standards set by government, regulators, and the credit rating agencies. But, more enlightened boards and managements saw the potential

strategic value of ERM. They internalized the vulnerabilities exposed by monstrous business failures: unforgivable venality, governance dysfunction, gross ineptitude. Perhaps most fundamental was the failure to appreciate increasingly frequent “tail events” associated with greater volatility in virtually all markets. This was the Taleb/Mandelbrot message. Systematic under-appreciation of tail events led to their mispricing and flawed decision making. Quite apart from the coercive influences of legislation, public regulators, and credit rating agencies, the growing appreciation of the Taleb/Mandelbrot message revealed to a new generation of business leaders the potentially accretive value of ERM.

There is a certain irony, or at least metronomic quality, in this managerial epiphany in that ERM is to some extent antithetical to TQM. A major theme of TQM was lean production, which called for minimal buffer stocks, reduced excess capacity and wider spans of control. But ERM is more inclined to see buffer stocks, and excess capacity, when judiciously employed, as core risk management tools. In any case, ERM has very definite organizational implications that tend to increase operating costs. ERM is process intensive and therefore demands personnel, and these tend to be among the costliest of personnel. A chief risk officer is *de rigueur*. A senior management risk oversight committee is similarly mandated by best practices, and then every staff and operating unit of the organization will have a risk *rapporteur*. In addition, the public company board will either have a standing committee or charge its audit committee with ERM responsibilities. Charters and manuals are drafted, including statements of risk philosophy and appetite, procedures are honed and then if all works well, information regarding hazards flow up and down the organization with unimpeded fluidity. This is a process with formality and costs quite apart from more direct risk mitigation initiatives, such as the cost of core-risk real options or ancillary risk hedging.

The question becomes, apart from compliance, how does ERM add value, especially since the costs are certain and the benefits prospective. Heightened awareness of ER reduces the probability, as well as the severity, of untoward outcomes and reduces the cost of *post hoc* legal, regulatory and rating agency recriminations. A word about each. Ignoring risks leads to their underpricing and therefore mitigation opportunities are under-exploited. Initiatives like maintenance of buffer stocks, rotational assignments for executives, forward contracting, soundly structured whistleblower procedures and all the many costs absorbed to enhance organizational resiliency ultimately reduce the probability of negative surprises, albeit never to zero. Too, when confronted with a business interruption or disruptive technological shock, the organization is better prepared, thereby reducing severity. This argument seems straightforward. The third effect, relating to *post hoc* recrimination may be less obvious. Business calamities are commonly followed by stakeholder and/or shareholder lawsuits in addition to regulatory sanctions. Credit downgrades are yet another possible accompaniment. The very best protection against these costly distractions is a well-documented state-of-the-art ERM program. It is perhaps the only persuasive answer to the question of what did you do to protect against such calamities. In speaking to the fiduciary standard of director “care” and “good faith,” ERM process integrity can serve as the bulwark of the business judgment rule.

Clawback provisions of Dodd-Frank speak to the alleged short-termism of corporate leaders. Here too, ERM’s focus on prospective benefits at the expense of current reported performance provides both a form of protection as well as a more basic performance enhancer. By definition, ERM provides a longer-term orientation.

In Sum

ERM is a process, but it is also a frame of mind, a culture. It is a collective assertion that the organization will bring its best talents to bear upon the challenge of avoiding surprises that threaten sustainability. It will consciously and judiciously forego current earnings in order to reduce the probability and severity of existential hazards.

But tractability requires that the firm distinguish between those risks with existential implications and the multitudinous others. Likewise, it must distinguish between those risks that are core and represent the firm's *raison d'être* and those that are ancillary and are therefore dealt with by other means. The former is managed augmentation whereas the latter is managed mitigation. These kinds of risks are managed antithetically and with a fundamentally different approach. We go to pains to specify an appetite for core risks, but there is no appetite for ancillary risks.

Nevertheless, both core and ancillary risks are managed within the unified ERM process lodged with the organization's board of directors. And at this level, ERM is the complement of strategy. The strategy chosen dictates the risks to be confronted, and the limits on risk constrain the choice of strategy. The dialog around these two topics is inextricable and at the board level it is reinforced by communications with senior management and specialized information provided by the office of the Chief Risk Officer. In turn, the Chief Risk Officer should be in constant communication with every operating and staff unit to ensure that all ER are identified and monitored. The integrity of this process of communication reduces the probability of ignoring the tail risks that threaten sustainability and distort the pricing of risk services.

A thought to close on: ERM can never eliminate disastrous outcomes, only those of our own making!