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Conceptual Framework—Thoughts from W. Paul McCrossan

by W. Paul McCrossan

Editor's note: This is an excerpt from a longer address to the International Accounting Standards Board on guiding principles. As the IASB and the European Commission work out application of a "fair value option" and continue to debate standards for portfolio hedging, these principles affect actuarial practice and risk management. ALM practitioners are familiar with the debate: how efficiently do insurance contract-holders and pension plan members exercise their options? Why are deposits automatically classed as liabilities? Which assumptions lead to useful information and sound management decisions, and why? Mr. McCrossan is a member of Eckler Partners, an affiliate of Milliman Global. The unabridged version of this paper will be posted to the Investment Section page of the SOA Web site.



Introduction

At the November meeting of the IASB's SAC, I raised strong support for the concept of a priority project to accelerate the development of a new conceptual framework for the IASB with emphasis on the role of reliability, the definition of liability, the meaning of probable, the effects of contingencies (i.e. contingent probabilities), the unit of account and accounting for contractual rights and obligations. I argued:

- That the conceptual framework project should have priority;
- That the project should also consider whether the "efficient market" hypothesis should continue to be implicitly assumed in the conceptual framework or whether "behavioral economics" should be substituted;
- That the project to revisit the framework should also reexamine the role of probability in general (rather than as restricted by the term "probable" in the context of recognition);

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- That, in order to test the desirability of any change to the conceptual framework, the project to revisit the framework should be closely coordinated with the projects that affect: banking (including financial instruments in general); insurance (including pensions and other employee benefits in general); and performance reporting. I mentioned this set of projects since, it seems to me as an outside observer, that the difficulties that the IASB and the FASB have experienced with them in the past might be directly related to the current conceptual frameworks of the IASB (and the FASB).

The Case for Considering A Framework Change toward Behavioral Economics

1. Behavioral economics compared to the “efficient market” hypothesis. Let me start with the case in favor of “behavioral economics” as opposed to the “efficient market” hypothesis. It is an observable fact that individuals do not always act rationally in their day-to-day lives. That is not to say that they do not act consistently over long periods of time. Most modern economic theory recognizes this observation. Most modern financial institutions attempt to create added value from consistently observed customer behavior (or, in the case of new products, expected behavior consistent with that observed from similar existing products until such time as statistically credible observations can be taken concerning the new product) in addition to the value they create from their normal intermediation operations.

For the remainder of this memorandum, I will restrict myself to examples that involve financial intermediation, i.e. banking and insurance, in their broadest terms. I make the point in this document that there may be three types of behavior that appear to be “irrational” to the financial intermediary:

- those caused by rational actions based on asymmetry of information;
- those caused by temporary excesses of fear and greed; and
- those caused by individuals trading off money against other values judged to be of greater utility such as convenience, risk aversion or leisure.

The second is irrational (“excessive”). The third is rational (in the “utility” sense).

First, in deep markets in which behavior can be publicly observed. Even though “irrational behavior” (evidenced by excessive price volatility) is observed in deep liquid markets, conventional financial reporting orthodoxy seems to be to accept

Most modern financial institutions attempt to create added value from consistently observed customer behavior...

observed transaction prices as evidence of fair values (presumably on the basis that there is no more credible information available at the time with which to measure *intrinsic* fair value). Stock markets and property markets are two such markets that are prone to observable “overshooting” and “undershooting” of rational fair values. There is ample statistical analysis that such “irrational behavior” exists in the probability distribution functions derived from measurements of movements even in large liquid stock markets as well as in property markets. The drivers of behavior in these markets are usually explained through the oft cited factors of fear, greed and asymmetry of information.

Analysis of the price fluctuations in these markets often demonstrates behavioral patterns that are “fat-tailed” (i.e. although they may have a similar appearance to normal distributions such as might be derived from random statistical measurement error, the number of “outlying” observations—extreme upward and downward price movements beyond two or three standard deviations—is not compatible with random statistical measurement error that would be expected from a normal distribution). From time to time, authoritative figures such as central bankers offer warnings against such “overshooting.” Recent noteworthy examples are the “irrational exuberance” remarks of Chairman Greenspan and the even more recent warnings from the Bank of England about excessive upward property price movements. Chairman Greenspan’s “irrational exuberance” warnings were timely; the market

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judged them to be premature. What is interesting is that, in spite of ample documented observations (in hindsight) about these large markets “overshooting” and “undershooting,” financial reporting orthodoxy seems to be to accept readily observable transaction prices in these markets as evidence of “fair values” (presumably, as mentioned above, because there is no better information about intrinsic fair value).

The point is that a bank may not know what is motivating its clientele to act “irrationally.”

For a time, actuaries and others attempted to deal with this observed overshooting and undershooting by using smoothed values derived from (possibly weighted) averaging of recent price observations. However, because the results of this smoothing could not be shown to be better measures of intrinsic fair value, the arguments in favor of smoothing to reduce the extent to which irrational behavior in deep liquid markets distorts financial reporting have been rejected. While I have noted this past practice used by actuaries for completeness, this paper does not advocate that such smoothing mechanisms be introduced to handle observed irrationality in financial reporting. Rather, the approach taken in this report is to use statistically credible observations of behavior throughout the recognition and measurement sections of the conceptual framework. The next section expands on this approach.

Second, in large markets in which behavior cannot be publicly observed. The same reliance on observed consistent behavior is not true of behavior that is observed in large markets for which there are not publicly available observations (especially markets that involve financial liabilities). I offer five simple, hopefully pertinent, examples of both rational behavior, irrational behavior and the “utility driven” types of rational behavior cited above for which there may be thousands, millions, or tens of millions of behavioral observations yearly that cannot be publicly observed—but which may be of relevance:

- **Bank depositors** who have made non-interest earning, or low interest earning, demand deposits may, collectively, leave large amounts

in their accounts for long periods earning little or no interest. Explanations of such behavior might be:

- The safety of having money in a bank compared to “stuffing it in a mattress”;
- The convenience of knowing that money will be on hand if and when needed;
- Lack of knowledge about how to balance a bank book leading to excessive caution;
- Lack of knowledge about how to make alternate interest earning investments;
- Fear of investing in alternative investments, etc.

Almost all of these observed behaviors cited above are likely “irrational” (in the efficient market sense). However, the customer may believe that his/her behavior is completely rational (in the utility sense). The point is that a bank may not know what is motivating its clientele to act “irrationally” (in the “efficient market” hypothesis sense). But banks can measure and monitor their customers’ behavior and make money from exploiting the risk that there will not be a “run on the bank”. [The roles that either banking supervision or the existence of bank deposit insurance play in avoiding “runs of the bank” are beyond the scope of this paper.]

- **Residential mortgage holders** may have the right to refinance their mortgages advantageously when interest rates fall and when the costs of refinancing are sufficiently low. Their behavior may be “irrational” in the efficient market sense, but quite rational in the utility sense.
 - The mortgage holder may feel the gain is not worth the added inconvenience.
 - The mortgage holder may not know the procedures to follow in order to refinance and may not feel that any potential gain is worth the effort to learn the procedures. Once again, the mortgage issuer may not know the reasons why its customers’ behavior is irrationally “sticky”; but it can monitor the behavior and manage its affairs to make

money from its observations. [Interestingly, mortgages can be held by the originating financial institution or can be bundled into collateralized mortgage obligations (CMOs) which might then trade in observable liquid markets. As deep liquid CMO markets have developed, it is evident that the transaction prices reflect an expectation of economically irrational (or “sticky”) behavior (which is rational in the utility sense). When such transaction prices can be publicly observed in the marketplace, they may be accepted as evidence of fair value. Yet, when comparable credible nonpublic observations can be made by the mortgage issuer itself (or by a service bureau that analyzes industry experience), the credible information may not be acceptable in measurement of values for financial statement purposes.]

- **Life insurance policyholders** may not surrender their insurance policies for the policies’ cash surrender values and may continue to pay renewal premiums. This behavior may or may not be irrational (in the “efficient market” sense).
 - The behavior may be economically rational if the insured is aware of a deterioration in health that might show up in a medical for a new policy and prevent the desired coverage from being replaced (whether or not a formal diagnosis of such a condition has yet been made).² Information about the extent of anti-selection is an example of asymmetry of knowledge about which insurers can develop credible statistics over time.
 - The behavior may also be economically rational even if the insured could replace the coverage because the future likely cash build-up under a new policy reflecting its incremental new acquisition expenses would be less than the insured expects to achieve by continuing with the existing policy.

- The behavior may be economically irrational (but quite rational in the utility sense) if, although the insured could actually benefit economically from a replacement policy, he/she does not view the potential gain as worth the time and effort to so do. The point is that an insurer may not know the extent to which its policyholders are acting economically rationally or rationally in the utility sense. But an insurer can monitor its customers’ behavior as it affects both persistency and the progress of mortality and morbidity through insurance claims frequency and severity analysis to manage its affairs to make money by using its knowledge concerning its customers’ collective behavior.
- **Holders of workers’ compensation, unemployment insurance or long-term disability income replacement policies** that pay (say) 70 percent of pretax insured earnings may be led to claim benefits under these coverages (or to continue to claim benefits under these coverages) even when they would seem to be able to return to work and receive 100 percent of their earnings. The behavior may be rational in the “efficient market” sense or may be rational in the utility value sense.
 - The behavior might be economically rational if the insured recognizes that his/her job may be about to disappear due to economic conditions.³ For example, workers compensation claims for “lower back soft tissue injury” among construction workers are often a leading indicator of an economic slowdown. This is an example of efficient exploitation of asymmetry of information by the insured.

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2) Often, through the selection process that occurs when an insurer underwrites a risk, an insurer gains knowledge about an insured’s health. An insured may suspect that an adverse health condition exists before a policy is issued, but may not yet have had a medical diagnosis. Acting on their suspicions to purchase insurance is known as “anti-selection.” A good, readily observable example of anti-selection may be that female policyholders who purchase critical illness insurance coverage are observed to be much more likely to develop MS in the period shortly after issue than should be expected—indicating that individuals can be sensitive to emerging symptoms before they become serious enough to consult a physician.

3) Such behavioral change is known in the insurance industry as “moral hazard”.

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- The behavior might be rational in the economic sense if the net income received from insurance exceeds the net income, after taxes and employment related expenses (including day care).
- The behavior might be irrational in the “efficient market” sense if the insured values more highly the utility of leisure time gained than the income lost. Such utility driven behavior is observable statistically in unemployment insurance plans where long claims length is more pronounced among secondary and tertiary earners (especially in high income families during times when a replacement job can be obtained at will). These lengthy claims are examples of rational behavior in which the utility of increased leisure has a higher value to the individual claimant than the “economically rational” value of increased income.
- **Policyholders who purchase a segregated fund** (separate account, or unit-linked) policy that contains a guaranteed minimum death benefit and a guaranteed minimum maturity benefit may experience losses in the segregated fund that make the value of these guaranteed minimum benefits potentially very valuable. In general, the larger the difference between the guaranteed value of the segregated fund and the realizable value of the segregated fund, the more the guarantees are worth. Similarly, the closer the guarantee is to realization (measured in time to maturity), the more valuable the minimum guarantees are. Yet, policyholders can be observed to surrender the policies in spite of the potentially very valuable guarantees.
- The behavior might be economically rational in that the policyholder needs the proceeds for other, more pressing purposes.
- The behavior might be economically irrational, but the policyholder might have lost confidence in the insurer from which the policy was purchased and “wants out” because of the perceived utility of “peace of mind.”
- The behavior might be economically irrational reflecting the fact that the policyholder (and possibly his agent) cannot make the assessment that waiting out the period to maturity will likely produce a higher than expected gain from almost any other investment. Such a decision could still be rational in the utility sense if the policyholder has more comfort in the new alternative investment.

The income replacement example is an example of a failure by the insurer to apply “the insurance principle.”⁴ Insurers (including social insurers) must monitor claims experience closely to enable income replacement insurance to be properly priced and designed to reflect both moral hazard and behavioral anti-selection.

The segregated fund example may be an example of economically irrational behavior that might be triggered by the utility the policyholder derives from avoiding fear of further losses (or from satisfying anger at incurred losses to date).

The real life examples above are not cited to advance the proposition that they warrant individual special financial reporting treatment. They are produced to illustrate the more general proposition that the business of financial intermediation should operate to try to develop detailed knowledge of customers’ collective behavior with respect to similar product lines, whether economically rational or rational in the utility sense. It should also monitor closely whether customer behavior is observed to change over time.⁵

4) The insurance principle is that the existence of insurance should not, in and of itself, be sufficient to change the frequency or the severity of the event being insured against.

5) It may be neither cost effective nor possible to determine the reasons underlying any one client’s behavior. It may be possible, and cost effective, to measure customers’ collective behavior concerning similar products.

2. Combining temporal risk due to behavior with financial risk. In general, financial intermediaries are exposed to two types of risk: financial/economic risk and customer behavioral risk (both rational anti-selective behavior and behavior that is irrational in the “efficient market” sense, but rational in the utility sense). A financial intermediary should monitor its customers’ behavior closely in order to better manage its intermediation business to see if the way the customer values utility changes over time. This is true for banking, insurance and pension operations. Financial intermediaries profit from investing monies in ways that allow a spread to be made from the difference between what is guaranteed (or expected to be paid, if greater) to the customer and what can be earned from the use of the customers’ monies. To do so, detailed financial estimates are made of the timing and amount of both the monies that will be received from the customer and the monies that will be paid to the customer bearing in mind the investments made. In making these estimations, the financial intermediary will take into account the most current credible information about the behavior of its customers (including anti-selective and utility driven behavior) as well as its most current information (and views) about the financial markets and the economy. As noted above, generally, the information about the behavior of its customers is derived from statistical analysis of a collective, relevant, portfolio of customers rather than from information about an individual customer.

A simple banking example involving only customer temporal risk. Consider a simple portfolio of deposits under banking agreements that provide for perpetual renewal of the deposits until the amount in the customer’s account falls below a specified minimum amount, which may be zero. In such a case, a bank will likely use its proprietary (*non-public*) statistical information about its customers’ behavior in order to estimate when they will actually ask for their money. A bank could then invest the monies in risk-free securities (e.g. government bills) that pay interest or mature in such a way as to provide the monies estimated to be needed by the bank when they are expected to be needed. In such a case, the bank will have assumed customer related “temporal risk,” i.e., the risk that the customers’ behavior will change and he or she will ask for money sooner (or later) than

expected—but it will not have assumed financial risk since it only invests in risk-free financial instruments. To the extent that the bank expects to receive monies in a timely fashion to pay for the expected withdrawal demands from its customers, it can be said to have “hedged” its deposit portfolio in the economic sense. But, current financial reporting standards may mean that it has not effectively hedged its portfolio in the financial reporting sense. This is because the value of the liability currently does not reflect the expected customers’ behavior, but rather reflects the imposition on the value of the liability to the customers that, under the efficient market hypothesis, it cannot be less than the “demand deposit floor.” On the other hand, the value of the government bills purchased to “hedge” the deposit portfolio fluctuates with market prices unless they are designated as HTM. This means that, although the bank has “hedged” its expected financial position, its earnings and its equity can fluctuate in ways that are a function of the differences in accounting measurement of its assets and liabilities rather than as a function of real expected financial gain or loss based on credible, recently observed customer behavior.

A financial intermediary should monitor its customers’ behavior closely in order to better manage its intermediation...

Involving only temporal and counterparty risk. Of course, the bank may be able to obtain access to “hedge” accounting treatment that eliminates this discrepancy by assuming additional counterparty risk and hedging its temporal risk using derivatives (for example by investing in very short bills and purchasing longer duration swaps). A reasonable question might be why access to hedge accounting to eliminate the asset/liability measurement inconsistency financial reporting problem is only available by assuming additional counterparty (default) risk rather than by investing directly in marketable risk free investments that do not merit HTM treatment.

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Involving temporal and financial (default) risk with cash instruments. Let's assume for the moment that the bank does not purchase risk-free government bills, but instead, purchases high quality, marketable, corporate instruments that are rated by rating agencies in order to have money available when needed. In this case, the bank has assumed both temporal risk (concerning its depositors' behavior) and financial risk (in this case corporate bond default risk). Once again the bank does not have access to "hedge" accounting because it has invested in real financial instruments. The earnings and equity in its financial statements are still subject to asset/liability measurement mismatch effects.

Involving temporal and financial (default) risk with bank originated loans. Let's assume for the moment that the bank does not purchase high quality marketable corporate instruments, but instead, invests in bank originated loans. As in the previous example, it has assumed both temporal risk⁶ and default risk. But it has avoided the asset/liability measurement mismatch risk by purchasing an asset class that is allowed to be valued at amortized cost. (I note that the basis of conclusions with respect to the insurance standard explains that amortized cost treatment was afforded these originated loans due to reliability problems in determining fair value. Such an asset class for measurement purposes can mitigate the potential asset/liability measurement inconsistency problem for banks when deposit liabilities are subject to a demand deposit floor.)

The purpose of this memorandum is not to argue that fair value measurement techniques should be imposed on originated loans. It does observe that by reliably measuring the fair value, this asset class would be a function of both expected default rates and the shape of the interest rate curve for the appropriate quality financial instruments as well as customer loan repayment patterns. The author believes that many types of originated loans have proven capable of statistically credible observation and estimation of both loan losses and customer behavior under specific financial/economic conditions since the decision to create the asset class was made by the FASB.

Consistency of measurement of assets and liabilities is essential to the preparation of relevant, reliable, financial reporting for financial intermediaries. The preceding examples provide demonstrations of a simple concept, that asset/liability measurement inconsistencies may arise (and subsequently disappear) as a bank moves from a less risky to a more risky asset/liability management process. The least risky A/L option illustrated may not qualify for hedge accounting treatment resulting in asset/liability measurement mismatch effects being reflected in financial reports. Adding incremental risk may result in there being considerably less need for hedge accounting in order to eliminate the asset/liability measurement mismatch effect.

A Final Thought about Hedging

It seems to me that many of the problems that financial intermediaries encounter in financial reporting could be addressed by incorporating the concept of probabilities in their estimation of cash flows for hedging purposes when effectiveness is tested as well as allowing hedging to involve the use of cash instruments. More of the problems in reflecting financial intermediaries' hedging might arise because partial hedges against only one risk (say economic risk rather than behavioral risk) might not be recognized as effective. Incorporating the concept of probability (and particularly behavioral economics) in assessing exactly what is hedged and what is not might allow for resolution of the hedging problem by allowing explicit recognition for what is effectively hedged while requiring "standard" financial reporting for the portion of the risks that are not hedged. 

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6) The temporal risk can be of two types in this example. First, the depositors' behavior may change with respect to the timing of withdrawals. Second, the borrowers' behavior may change with respect to patterns of repayment or refinancing.