

Freddie Mac, Fannie Mae: Dangers of Using Derivatives in the Secondary Mortgage Markets

Dr. A. Frank Thompson, UNI Professor of Finance

320 Baker Hall

E-Mail Address: actuary1@uni.edu

Website: www.uni.edu/thompsona

Over the past few weeks, given my calling as a professor of Finance, several people have asked me whether I was, in any way, responsible for the meltdown of the financial markets and the current administration's \$800 billion bailout. My response is that I make far too little money working at the university, to produce such impressive results. However, one can only imagine what \$800 billion might do in such areas as the arts, literature, science, education, and medicine. Our current financial crisis provides a cogent argument as to why the public's interests are best served by allowing faculty research to be incorporated into making good public policy decisions. Conversely, the lack of respect and the marginalization of independent and objective faculty research can be quite costly.

In 1980s, I was asked, as an AACSB Federal Faculty Fellow, on leave from the University of Cincinnati, to develop a financial and actuarial analysis of risk related premiums and loss reserving on deposit insurance. My paper entitled, "An Actuarial Perspective on the Adequacy of the FSLIC Fund," concluded that risk based premiums and appropriate long-term reserving could not be accurately calculated given the deregulation that was going on in the banking industry.¹ Loss experience to the FSLIC deposit insurance fund from 1933 to 1980 was minimal. You could count on one hand the number of bank failures and in those cases; losses to the fund were more than made up by the return on FSLIC invested assets. Ironically, the Bank Board commissioned my study because the current administration thought that FSLIC deposit premiums might be reduced on the basis of this low loss experience. The popular, prevailing view was that the Bank Board could garner support from the banking industry by lowering FSLIC premiums while simultaneously expanding powers long restricted by laws enacted during the Great Depression. However, in evaluating the emerging risks of allowing banks to purchase real estate through direct investment and the unknown loss potential from permitting banks to engage in derivative transactions, I concluded that credible, actuarial reserving was problematic. It was amazing to me at the time, that there was little thought to the implications of direct investment and derivatives on the risks FSLIC was insuring when the Monetary Control Act was passed in 1980. Perhaps, due to my background in actuarial science, I was more accustomed to looking at the underwriting side of insuring risk, in addition, to calculating a viable premium to cover loss. A private insurer must focus not only on premium adequacy, but also on the ability of underwriters to cull bad risks out of the insurance pool. The philosophy of FSLIC and every other governmental insurance fund was the belief that the U.S. Treasury, with the help of American taxpayers, is capable of covering any and all losses underwritten by a governmental insurer. Showing the type of initiative that produced such spectacular financial results in the

¹ A. Frank Thompson, "An Actuarial Perspective on the Adequacy of the FSLIC Fund," Federal Home Loan Bank Board, Research Working Paper No. 102, (February 25, 1981)

S&L industry during the 1980's, the Bank Board decided to shelve my research in favor of the more popular bank lobbyist position, to further deregulate the financial services industry.

From 1980 up until this past month, the long held view in Washington DC has been to promote deregulation without regard to the safety and soundness of the banking system. What was always missing from this point of view is the fact that taxpayers would eventually be on the hook for any losses embedded in governmental agencies such as the FSLIC, FDIC, Fannie Mae, Freddie Mac and PBGC. In the 1990's when Freddie Mac and Fannie Mae moved from being quasi-governmental agencies to fully capitalized stock companies, little thought was given to the potential costs associated with the implicit government guarantees provided by the Treasury Department. One possible explanation for this apparent lack of foresight may be the long-held assumption that mortgage originators would adhere to reasonable loan to value ratios, accurate appraisals, and credit evaluations as part of good business practice. Despite the significant taxpayer losses in the S&L industry during the 1980's, the Washington DC climate for the past 28 years has been to deregulate the financial services industry in order to make US financial institutions globally competitive. We now know that this wishful thinking has and is exacting a tremendous cost on US taxpayers, as well as, the American and global economy. There is an old saying in the accounting profession, that some business you would rather have your competitors take, which leaves one only to wonder what might have been had our government decided to limit the use of derivatives and the insuring of those securities; permitting other foreign firms the luxury of trading in derivatives. Warren Buffett refers to derivatives as weapons of financial destruction it is for good reason. Derivative securities are leveraged, layered financial instruments whose value may change dramatically over time. Derivative securities are not all alike in terms of their performance risk. Derivative securities such as futures or options are subject to clearing corporation rules that limit the risk of nonperformance on any of these contracts. Forwards and swaps on the other hand, do not have the backing of a clearing corporation which means that counterparty performance risk is an additional concern in these arrangements.² The implosion of the credit default swap market that played a significant part in the current financial meltdown was due in part, to the failure of counterparties such as Lehman Brothers to stand behind their financial contracts. Since the counterparties were being insured by companies such as AIG, the catastrophic losses in the credit default swap market brought down those covering the performance risk on these swap arrangements

In an effort to make the American taxpayer feel good about their new \$700 billion investment in the financial markets, and perhaps to make the current administration appear contentious, the claim is made that these financial losses were unexpected, due to a once in a lifetime event, a sort of financial tsunami.³ However, events of the 1980's did serve as a precursor to the present set

² Bower, Linda E., and A. Frank Thompson, "A Longitudinal Analysis of Interest Rate Swap Agreements Among Financial Institutions," *Federal Home Loan Bank Board Working Paper*, (1987), pp3-4.

³ See: "Greenspan admits 'mistake' that helped Crisis," Associated Press, October 23, 2008 at: <http://www.msnbc.msn.com/id/27335454/>

of difficulties now being experienced. Analysis of S&L failures during the 1980's clearly showed that credit quality losses proved to be a significant factor in bringing down the industry.⁴ These credit quality issues were the result of both moral and morale hazards. Some S&Ls such as Lincoln Savings created massive losses to FSLIC due to the unscrupulous ways in which depositor monies were fraudulently invested in real estate properties [a moral hazard]. Other S&L losses occurred because mortgage originators were given fat salaries for creating loans on highly leveraged properties [a morale hazard]. The mechanism that permitted these activities to go on unchecked was the underpriced, virtually free deposit insurance offered to S&Ls that covered depositors regardless of how ill-advised the S&L executives spent their money. The provision of governmental guarantees for Fannie Mae and Freddie Mac represented a continuation of providing government insurance without regard to underwriting the risks. In the mid- 1980's the public began to become aware of problems in the S&L industry as result of the failure of Home State Savings and Loan in Ohio.⁵ This state insured [Ohio Deposit Guarantee Fund] failed as a result of a reverse repurchase arrangement that went awry. Prior to the failure most financial economists and accountants held the view that these short term interest arrangements were virtually riskless in terms of default.⁶ The mechanics of the transaction involved Home State Savings transferring liquid treasury securities to a Florida based firm by the name of ESM in exchange for a short term loan that would be repaid with interest in a matter of months. During the intervening months, ESM took the Home State securities and did some borrowing on its own the loan proceeds being used to make investments. Unfortunately, ESM's investments did not pay off and when it came time for Home State to buy back the securities, ESM no longer had access to them. This vivid example of the failure of a financial institution due to credit quality problems of a counter party to a forward contract should alerted regulators to one of the unique risks associated with some derivative contracts [particularly forwards and swaps]. Once the depositors got wind of the failing health of their home town S&L they formed lines outside the building and requested their money. Since Home State was the largest insured institution within the state deposit guarantee fund there were not sufficient liquid assets to pay off depositors. Depositor uncertainty along with national publicity resulted in the federal government coming in to bail out Home State in April 1985. The rationale at the time was to assure the safety and soundness of the banking system. Around the same time, Baldwin-United Insurance company failed and had to be rehabilitated under the Indiana Insurance Commissioner. In 1984, Baldwin-United was the single largest insurance failure and rehabilitation in the history of the insurance industry. The cause of this colossal bankruptcy was the penchant to use policyholder dollars to invest in real estate oriented companies such as the title insurer MGIC. In order to secure policyholder funds for these investments, the CEO placed subordinated debentures in the Baldwin-United insurance subsidiaries as admitted assets for the purpose of reserving. This scheme went on for quite some time, until the insurance commissioner when auditing the insurer discovered these wonderful assets and asked that Baldwin-United replace the

⁴ Thompson, A. Frank, P.V. Medury, A. Ramjee, and B. Ramjee, "An Actuarial Approach to the Analysis of Post Deregulation Thrift Failures in the USA," [Proceedings of the Actuarial Conference on Financial Institution Risks](#), (April 1990), Paris, France.

⁵ Bowyer, Linda E., A. Frank Thompson, and V. Srinivasan, "The Ohio Banking Crisis: A Lesson in Consumer Finance," *The Journal of Consumer Affairs*, Vol. 20, #2(Winter 1986), pp. 290-299.

⁶ For an explanation of why a repurchase arrangement have some default risk, refer to an article where I describe these risks prior to Home State Savings, "Investors having doubts about High-Yield Savings," Nancy Ross, Business Editor, [The Washington Post](#), Business Section, August 15, 1984.

debentures with something of more substance. By that time, the Baldwin-United “investments,” had shrunk in value to such an extent that there were no viable, liquid admitted assets to meet the reserve call by the insurance commissioner. The lack of solid securities led to the closure of Baldwin-United which required a delicately designed rehabilitation plan to bailout the insurer, and restore lost benefits to the policyholders.⁷ In a fashion similar to what is now being experienced with respect to Fannie Mae and Freddie Mac, the Indiana Insurance Guarantee Fund did not have sufficient resources to make policyholders whole. The state insurance guarantee fund apparently did not consider the underwriting issues related to allowing their insured financial institutions to engage in unregulated investments with other people’s money. The problem with insuring financial institutions at rates far below the fair cost of coverage is the catastrophic losses that can be produced when the managers bet the bank knowing full well that it is the government, as the insurer of last resort, that will eventually pick up the tab. In this type of freewheeling, free market economy the rewards go to those managers who take inordinate risks, earn short term profits and then leave the financial losses to future generations of managers and/or American taxpayers.⁸

Basic Concepts Related to Derivative Securities

A derivative security is one that is based [i.e. derived] on another underlying financial instrument. Derivative securities involve predicting both the direction and timing of price changes in the underlying security. Someone who holds a derivative contract can be right about the price direction of an underlying financial security, but if they are wrong about the timing of such change it is possible to lose money; in some cases lots of money. On the other hand, if you own a financial security outright and have the ability to hold onto it, you may be able to determine a sale date that offers you a profit on your position.⁹ There appears to be two legitimate uses of derivatives which may, within a limited context, be helpful to corporations. First, a futures or options contract may be used to hedge an underlying position within a corporation to lock-in a price for a commodity[e.g. oil, coal, corn, soybeans, gold, silver] or the cost of money [e.g. interest rates, currency].¹⁰ Second, a futures or options contract may be used

⁷ For a discussion of this case and the rehabilitation plan, see: "Baldwin Annuity Holders May Review Rehabilitation Plan," by Dan Andriacco, *Cincinnati Enquirer Business Section*, January 18, 1984, p. 5B. This article presents part of my testimony in the Baldwin United Rehabilitation Case. It provides my option which gives policyholders over 75 the right to withdraw their entire annuity balance before the end of the 3 1/2 year rehabilitation period.

⁸ Two recent publications which serve to highlight the perverse incentives for betting the bank in order to receive lucrative rewards in the short run, can be found in: Frank Partnoy, *FIASCO: The Inside Story of a Wall-Street Trader*, (Penguin Books, 1999) and Robert Lowenstein, *When Genius Failed; The Rise and Fall of Long-term Capital Management*, (Random House Publishing, 2001).

⁹ For example, if you hold a 30 year U.S. Treasury bond, its price will fluctuate over time with market rates of interest. However, at the time of maturity the bond will converge to its face amount. Holding the bond may generate an opportunity loss should interest rates go up, however, if the bond is never sold and is held to maturity the value of the bond will equal its face amount.

¹⁰ For example, a bank has retained a \$100 million mortgage loan portfolio consisting of 30 year fixed rate mortgages, generating a 6% annual interest return. The bank is concerned that interest rates will increase [say to 8%] causing two adverse financial impacts. The value of the mortgage portfolio declines due to the repricing of the fixed rate loans at the higher interest rate. The higher interest rate leads to disintermediation when the return on the portfolio is insufficient to pay depositors a higher rate to retain their business. So, at some point the bank may

to lock-in a sale or purchase price on goods or services that are going to be acquired sometime in the future. A futures contract is a financial agreement **that requires** an individual to take or make delivery of an asset at some specified price sometime in the future. An options contract is **the right** to buy or sell an asset at a specified price sometime in the future. Note that an option may or may not be exercised by its owner. Those who purchase an option have a limited loss related to the value of the option at time of purchase. Individuals who write such contracts may have unlimited liability if the futures contract on which the option is based moves adversely. A futures contract obligates either fulfillment by delivery or the use of offset and as a consequence can involve unlimited loss. Futures and options contracts are regulated through the Commodity Futures Trading Commission [CFTC] and the requirements of the exchange where the contracts are traded. A futures contract involves taking a position such that the owner of the contract has leveraged ownership of the underlying assets. So, for example if I sell 1 Treasury Bond futures contract, I have effectively sold \$100,000 worth of bonds and would be required to cover whatever changes occur to this position as a result of repricing due to changes in market interest rates. The Chicago Board of Trade that offers this contract requires that market participants put up an initial margin equivalent to the maximum move a contract could make against its opening value. At the end of the day the contract is marked to market and those whose positions lost money will pay maintenance margin equivalent to the loss for the day. If a contract holder cannot meet margin, the CBOT Clearing Corporation will close out the position and use the initial margin to cover any losses. So, due to the existence of a clearing corporation there is limited risk of non-performance on a futures position. You put up enough money to cover the first day's loss. At the end of the first day, you cover any losses incurred that day. The initial margin is still available at the beginning of each day to insure that there are sufficient funds to meet any losses the contract might produce during the day. Maintenance margin will be adjusted each day to reflect the results of daily trading until the expiration of the contract.

In contrast to futures and options, are the negotiated derivative contracts such as forwards and swap arrangements. A forward contract is one where two parties agree to a purchase/sale of some commodity at a specified time in the future at an agreed upon price. Forward contracts are not subject to margin requirements on an organized exchange, do not have the backing of a clearing corporation and can not be easily liquidated during the contract period. The main advantage to a forward contract is that it can be customized to meet the particular needs of the parties to the agreement. For example, if a financial institution wants to hedge its fixed-rate mortgage position over a ten year period, it can do so with a 10-year forward agreement. The strength of the contract in terms of fulfillment is based on the capitalization of the individual parties [referred to as counter-parties] to the arrangement. A major disadvantage is that the

enter into a futures or options contract to hedge this risk. The derivative contracts will move in a direction opposite to the price movement of the mortgage portfolio such that a loss in the underlying security is balanced against a gain in the derivative. It should be noted that the converse is also true; a gain in the underlying security will have to be netted against a loss in the derivatives contract. So in this instance, the use of derivatives assure a stable interest rate environment for the bank. The cost of this insurance is the foregone return if the underlying instrument increases in value, as well as the administrative expenses associated with implementing the derivative position [e.g. initial/maintenance margin].

value of the agreement to the individual parties may not be known until the end of the contract.¹¹ Another problem with forwards is their illiquidity. If you want to unwind [get out of] a forward arrangement you have to find a buyer of your position who is acceptable to the counter to your agreement. Unlike the CBOT futures market where you can easily unwind your contract by offset [taking a position opposite to the one you own on the futures market], with a forward you have to find someone who is willing to take over your position and has a capital position that is acceptable to the counter. Another interesting difference is that a forward contract generally results in delivery at the end of the contract. Most futures contracts do not end with actual delivery, but rather are settled by offset, a less cumbersome methods of resolving a hedged position. A swap arrangement differs from a forward in how cash flows are exchanged. In the case of a forward, exchange is made on the asset commodity itself. For example, a forward contract to deliver 100,000 barrels of oil at a price of \$110 per barrel five years from now requires the purchase/delivery of oil five years hence. A swap agreement involves the exchange of cash flows that may be derived from some underlying assets. For example, suppose that a bank [A] has a \$10 million fixed rate mortgage portfolio that generates an annual return of 5.5%, while another bank[B] has a \$10 million home equity portfolio that is pegged to the prime interest rate plus 1.5%. The two banks enter into a swap arrangement whereby they exchange interest in the event short term interest moves above or below a set point of 4%. If the prime interest rate plus 1.5% is below 4% then the fixed rate payer [A] will pay the variable rate payer the difference between 5.5% and prime plus 1.5%. If the prime interest rate goes above 4% then the variable rate payer [B] will pay the fixed rate payer [A] an amount equal to difference between the prime rate plus 3% and 4%. In the latter case, should the difference be negative the two parties would retain their respective cash flows. Note that neither party to the contract exchanges the assets [notional principal] on which these cash flows are based. Just as in the case of a forward contract, swaps are negotiated contracts that can extend for many years with the strength of the agreement depending on the capital and commitment of the counter parties. Because there is no exchange of notional principal the traditional argument has always been [up to the current financial meltdown and economic crisis], that there could be no performance risk in these arrangements. However, as we now know from the credit default swap debacle, there are some definite and significant risks associated with the failure of a counter to a swap arrangement. Further in the case of swaps, as well as, forwards there is a contagion risk. Parties to these agreements may seek to unwind their contracts by taking a position opposite to the original with a completely different counter. What this does is to make all the counters down the line subject to the credit worthiness of the counters in those subsequent trades. The net result is to make all counters in the chain of swaps subject to loss if one of the counter parties fails to meet its commitment. This catastrophic risk was realized when the credit default swap market collapsed following the failure of Lehman Brothers an investment bank that was thought to be well capitalized and not likely to default on its swap agreements.

In conclusion, any accounting rules relating to derivatives should define the very narrow scope under which such arrangements may be safely and transparently made. One litmus test is that a derivative contract should be easily understood, represent a hedged position and be limited to the

¹¹ Forward contracts are sometimes referred to as European, as opposed to, American futures contracts because their value cannot be determined until the time of delivery. Futures on the CBOT are American futures because they are marked to market every day.

amount of liquid capital a participant can use to guarantee performance and cover losses. Instead of allowing derivatives to be used and then evaluate the risk of loss, accountants should develop rules which require that derivatives be screened for risks and evaluated for loss, only allowing those contracts that have merit and don't represent a potential for fundamental, catastrophic loss.