

Are Interest Rate Derivatives a Ticking Time Bomb?

By [Washington's Blog](#)

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Derivatives are the world's largest market, dwarfing the size of the bond market and world's real economy.

The derivatives market is currently at around [\\$600 trillion](#) or so (in gross notional value).

In contrast, the size of the worldwide bond market (total debt outstanding) as of 2009 was an estimated [\\$82.2 trillion](#).

And the CIA Fact Book puts the world economy at [\\$58.07 trillion](#) in 2009 (at official exchange rates).

Interest rate derivatives, in turn, are by far the most popular type of derivative.

As Wikipedia [notes](#):

The interest rate derivatives market is the largest derivatives market in the world. The Bank for International Settlements estimates that the notional amount outstanding in June 2009 were US\$437 trillion for OTC interest rate contracts, and US\$342 trillion for OTC interest rate swaps. According to the International Swaps and Derivatives Association, 80% of the world's top 500 companies as of April 2003 used interest rate derivatives to control their cashflows.

So interest rate derivatives are the world's largest market.

The largest interest rate derivatives sellers [include](#) Barclays, Deutsche Bank, Goldman and JP Morgan. While the CDS market is dominated by [American banks](#), the interest rate derivatives market is more international.

In comparison to the almost \$500 trillion in interest rate derivatives, BIS estimates that there were "only" [\\$36 trillion](#) in credit default swaps as of June 2009. Credit default swaps were largely responsible for [bringing down](#) Bear Stearns, [AIG](#) (and see [this](#)), WaMu and other mammoth corporations.

Where's the Danger?

In 2003, John Hussman [wrote](#):

What is not so obvious is the extent to which the U.S. economy and financial markets are betting on the continuation of unusually low short-term interest rates and a steep yield curve. This doesn't necessarily resolve into immediate

risks, but it could profoundly affect the path that the economy and financial markets take during the next few years, by making the unwinding of debt much more abrupt.

In response to very low short-term interest rates, many U.S. corporations have swapped their long-term (fixed interest rate) debt into short-term (floating interest rate) debt, to the extent that an increase in short-term rates could substantially raise default risks. Similarly, a growing proportion of homeowners have refinanced their mortgages into adjustable rate structures that are also sensitive to higher short-term yields. Finally, profitability in the banking system is unusually dependent on a steep yield curve, with a widening net interest margin (the difference between long-term rates banks charge borrowers and the lower short-term rates they pay depositors) ...

According Bank for International Settlements, the U.S. interest rate swap market [has] nearly doubled in size in the past two years. The reason this figure is so enormous is that there are usually several links in the chain from borrower to investor. A risky borrower may enter a swap with bank A, which then takes an offsetting swap position with bank B (earning a bit of the credit spread as its compensation), and so on, with a cheerful money market investor at the end of the chain holding a safe, government backed security, oblivious to the chain of counterparty risk in between.

Aside from the risk that any particular link in this chain might be weak (know thy counterparty), the U.S. financial system has gone one step further. In order to hedge against the risk of defaults, banks frequently lay credit risk off by entering "credit default swaps" with other banks or insurance companies. These swaps essentially act as insurance policies for credit risk.

In short, the U.S. financial system is in a delicate balance. On the issuer side, a great many borrowers have linked their debt obligations to short-term interest rates. This is tolerated by the financial system because the debt has been swapped out through financial intermediaries, so investors get to hold relatively safe instruments like bank deposits and Fannie Mae securities. This mountain of debt in the U.S. financial system – tied to short-term interest rates – is ultimately and perhaps somewhat inadvertently backed by the U.S. government.

On the investor side, Asian governments intent on holding their currencies down relative to the U.S. dollar have purchased a great deal of U.S. government and agency debt – effectively "buying dollars." ... A reduction of demand for U.S. short-term debt, either by foreign governments (particularly in the event that Asian governments decide to revalue their currencies) or by U.S. investors, could have very undesirable consequences.

All of which is why the U.S. is now extremely dependent on short-term interest rates remaining low indefinitely.

In March 2009, Martin Weiss [wrote](#):

Until the third quarter of last year, the banks' losses in derivatives were almost entirely confined to credit default swaps — bets on failing companies and sinking investments.

But credit default swaps are actually a much smaller sector, representing only 7.8 percent of the total derivatives market.

Thus, considering their far larger volume, any threat to interest rate derivatives could be far more serious than anything we've seen so far.

And Monday, Jerome Corsi [argued](#) that cities, states and universities might be wiped out by changes in interest rates:

As interest rates begin to rise worldwide, losses in derivatives may end up bankrupting a wide range of institutions, including municipalities, state governments, major insurance companies, top investment houses, commercial banks and universities.

Defaults now beginning to occur in a number of European cities prefigure what may end up being the largest financial bubble ever to burst - a bubble that today amounts to more than \$600 trillion.

A popular form of derivative contracts was developed to permit one money manager to "swap" a stream of variable interest payments with another money manager for a stream of fixed interest payments.

The idea was to use derivative bets on interest rates to "hedge" or balance off the risks taken on interest-rate investments owned in the underlying portfolio.

If an institutional investment manager held \$100 million in fixed-rate bonds, for example, to hedge the risk, should interest rates rise or fall in a manner different than projections, a purchase of a \$100 million variable interest rate derivative could be constructed to cover the risk.

Whichever way interest rates went, one side to the swap might win and the other might lose.

The money manager losing the bet could expect to get paid on the derivative to compensate for some or all of the losses.

In the strong stock and mortgage markets experienced beginning in the historically low 1-percent interest rate environments of 2003 through 2004, the number of hedge funds soared, just as the volume of derivative contracts soared from a mere \$300 trillion in 2005 to the more than \$600 trillion today.

Unsophisticated Entities Getting Taken by Interest Rate Derivatives Salesmen

In 2008, Bloomberg [pointed out](#) that the SEC was investigating shady interest rate

derivatives sales by JP Morgan and Morgan Stanley to school districts.

In 2009, New York Times writer Floyd Norris [noted](#):

On the front page of The Times today, Don van Natta Jr. has a good [article](#) about the woes of little towns and counties in Tennessee that bought interest-rate derivatives sold by Morgan Keegan, an investment bank based in Memphis.

It turns out that these municipalities did not understand the risks they were taking. The derivatives have now blown up, and the officials are blaming the bank.

Matt Taibbi also recently [noted](#) that JP Morgan used interest rate swaps to decimate a small Alabama town:

The initial estimate for this project was \$250 million. They ended up spending about \$3 billion on this. And they ended up owing about \$5 billion in the end, after you look at all the refinancing and the interest rate swaps and everything.

As the Bloomberg, Times and Taibbi stories hint, many unsophisticated schools, cities, states and universities were played by the big interest rate derivatives sellers, just as many people were played by the CDS sellers. So the fallout will likely be substantial.

But Aren't Interest Rate Derivatives Straightforward and Useful?

You might assume that interest rate derivatives appear to have a much more straightforward, legitimate business purpose than credit default swaps.

Interest rate derivatives certainly help many individual businesses control and hedge their costs. And they may be more straightforward and transparent than CDS.

But people tend to overestimate their ability to understand complex financial instruments. For example, the credit default swap salespeople and their bosses [didn't really didn't understand CDS](#).

And - because the market for interest rate derivatives dwarfs the market for CDS - the reduced risks of each transaction might be collectively offset by the tremendous number of transactions and the gigantic size of the market as a whole.

In addition, when a bunch of individuals all attempt to reduce their risks at the same time in the same way, it can *increase* the risk to the overall system.

As George Soros pointed out in 1994, the excessive use of hedging can and often does backfire:

I must state at the outset that I am in fundamental disagreement with the prevailing wisdom. The generally accepted theory is that financial markets tend toward equilibrium and, on the whole, discount the future correctly. I operate using a different theory, according to which financial markets cannot

possibly discount the future correctly because they do not merely discount the future; they help to shape it. In certain circumstances, financial markets can affect the so-called fundamentals which they are supposed to reflect. When that happens, markets enter into a state of dynamic disequilibrium and behave quite differently from what would be considered normal by the theory of efficient markets. Such boom/bust sequences do not arise very often, but when they do they can be very disruptive, exactly because they affect the fundamentals of the economy...

The trouble with derivative instruments is that those who issue them usually protect themselves against losses by engaging in so-called delta, or dynamic, hedging. Dynamic hedging means, in effect, that if the market moves against the issuer, the issuer is forced to move in the same direction as the market, and thereby amplify the initial price disturbance. As long as price changes are continuous, no great harm is done, except perhaps to create higher volatility, which in turn increases the demand for derivatives instruments. But **if there is an overwhelming amount of dynamic hedging done in the same direction, price movements may become discontinuous. This raises the specter of financial dislocation. Those who need to engage in dynamic hedging, but cannot execute their orders, may suffer catastrophic losses.**

This is what happened in the stock market crash of 1987. The main culprit was the excessive use of portfolio insurance. Portfolio insurance was nothing but a method of dynamic hedging. The authorities have since introduced regulations, so-called 'circuit breakers', which render portfolio insurance impractical, but other instruments which rely on dynamic hedging have mushroomed. They play a much bigger role in the **interest rate market** than in the stock market, and it is the role in the interest rate market which has been most turbulent in recent weeks.

Dynamic hedging has the effect of transferring risk from customers to the market makers and when market makers all want to delta hedge in the same direction at the same time, there are no takers on the other side and the market breaks down.

The explosive growth in derivative instruments holds other dangers. There are so many of them, and some of them are so esoteric, that the risks involved may not be properly understood even by the most sophisticated of investors. Some of these instruments appear to be specifically designed to enable institutional investors to take gambles which they would otherwise not be permitted to take

[Doug Noland](#) wrote an intriguing [article](#) in 2001 – based on the research of [Bruce Jacobs](#) (doctorate in finance from Wharton, co-founder of Jacobs and Levy Equity Management) on portfolio insurance – arguing that interest rate derivatives were widely being used without understanding the risks they create for the system (warning: this is *long* ... go get some caffeine, sugar, nicotine or exercise, and then come back and keep reading):

I would like to suggest moving Bruce Jacobs' excellent book, *Capital Ideas and Market Realities* to the top of reading lists. From the forward by Nobel Laureate Harry M. Markowitz: "Many observers, including Dr., Jacobs and me, believe that the severity of the 1987 crash was due, in large part, to the use before and during the crash of an option replication strategy known as 'portfolio

insurance.’ In this book, Dr. Jacobs describes the procedures and rationale of portfolio insurance, its effect on the market, and whether it would have been desirable for the investor even if it had worked. He also discusses ‘sons of portfolio insurance,” and procedures with similar objectives and possibly similar effects on markets, in existence today.”

From Dr. Jacobs’ introduction: “This book ... examines how some investment strategies, especially those based on theories that ignore the human element, can self-destruct, taking markets down with them. Ironically, the greatest danger has often come from strategies that purport to reduce the risk of investing.

“In 1987, as in 1998, strategies supported by the best that finance theory had to offer were overwhelmed by the oldest of human instincts – survival. In 1929, in 1987, and in 1998, strategies that required mechanistic, forced selling of securities, regardless of market conditions, added to market turmoil and helped to turn market downturns into crashes. Ironically, in 1987 and 1998, those strategies had held out the promise of reducing the risk of investing. Instead, they ended up increasing risk for all investors.”

I would like to explore the concepts behind the current dangerous fad of derivatives as a mechanism to insure against rising interest rates, as well as the momentous ramifications to both financial market and economic stability from these instruments that rely on dynamic hedging strategies. From Jacobs: “Option replication requires trend-following behavior – selling as the market falls and buying as it rises. Thus, when substantial numbers of investors are replicating options, their trading alone can exaggerate market trends. Furthermore, the trading activity of option replicators can have insidious effects on other investors.”

Dr. Jacobs adeptly makes the important point that the availability of portfolio insurance during the mid-1980s played a significant role in fostering speculation that led to the stock market bubble and the crash that followed in October 1987. “Rather than retrenching and reducing their stock allocations, these investors had retained or even increased their equity exposures, placing even more upward pressure on stock prices. And, of course, as equity prices rose more, ‘insured’ portfolios bought more stock, causing prices to rise even higher...Ironically, the dynamic trading required by option replication had created the very conditions portfolio insurance had been designed to protect against – volatility and instability in underlying equity markets. And, tragically, portfolio insurance failed under these conditions (because...it was not true insurance). The volatility created by the strategy’s dynamic hedging spelled its end.”

“In the months following the (1987) crash, a number of investigative reports examined the trading data for the crash period. The Securities and Exchange Commission and the Brady Commission (the Presidential Task Force), for two, found that the evidence implicated portfolio insurance as a prime culprit.” ...

Dr. Jacobs' wonderful effort explains ... the potential dangers of a complex financial theory taken up with little appreciation of its suitability for real-world conditions and applied mechanistically with little regard for its potential effects. It is a story about how a relatively small group of operators, in today's complicated and interconnected marketplaces, can wreak havoc out of all proportion to their numbers...it is a story of unintended consequences. For synthetic portfolio insurance, although born from the tenets of market efficiency, affected markets in very inefficient, destabilizing ways. And option replication, although envisioned as a means for investors to transfer and thereby reduce unwanted risk, came to be a source of risk for all market participants."

Unfortunately, **this language seems at least as applicable to today's interest rate derivative market as it was for equity portfolio insurance.** It is certainly our view that the contemporary U.S. and global financial system characterized by unfettered money, credit and speculative excess creates unprecedented risk for all market participants, as well as citizens both at home and abroad. Not only have flawed theories prevailed and past crises been readily ignored, derivatives (**interest rate in particular**) have come to play a much greater role throughout the U.S. and global financial system. The proliferation of derivative trading is a key element fostering credit excess and a critical aspect of the monetary processes that fuel recurring boom and bust dynamics, as well as the general instability wrought by enormous financial sector leveraging and sophisticated speculative strategies. This certainly makes the proliferation of interest rate derivatives significantly more dangerous than stock market derivatives. Under these circumstances, it does seem rather curious that more don't seriously question the soundness of this unrelenting derivative expansion. Unfortunately, ignoring the dysfunctional nature of the current system does not assist in its rectification – anything but. Indeed, it is my view that these previous market dislocations will prove but harbingers of a potentially much more problematic crisis that is quietly fermenting in the U.S. (global) credit system.

Clearly, the gigantic interest rate derivative market should be recognized as a very unusual beast. Instead of providing true interest rate hedging protection, this is clearly the financial sector having created a sophisticated mechanism that, despite its appearance, is limited to little more than "self insurance" – "The Son of Portfolio Insurance." I have written repeatedly that markets cannot hedge themselves, and that derivative "insurance" is different in several critical respects from traditional insurance. From Dr. Jacobs: "Synthetic portfolio insurance differs from traditional insurance where numerous insured parties each pay an explicit, predetermined premium to an insurance company, which accepts the independent risks of such unforeseeable events as theft or fire. The traditional insurer pools the risks of many participants and is obligated, and in general able, to draw on these premiums and accumulated reserves, as necessary, to reimburse losses. Synthetic portfolio insurance also differs critically from real options, where the option seller, for a premium, takes on the risk of market moves." Such exposure to unrelated events is far different from exposure to a market dislocation. Quoting leading proponents of portfolio insurance from 1985, "it doesn't matter that formal insurance policies are not available. The mathematics of finance provide the answer...The bottom line is that financial catastrophes can be avoided at a relatively insignificant cost."

Amazingly, such thinking persists to this day. The above language, of course, is

all too similar to the flawed analysis/erroneous propaganda that is the foundation for the proliferation of hedging strategies and the explosion of derivative positions. Dynamic hedging makes two quite bold assumptions that become even more audacious as derivative positions balloon: continuous markets and liquidity. As writers of technology puts ...experienced, individual stocks often gap down significantly on earnings or other disappointing news, not affording the opportunity to short the underlying stock at levels necessary to successfully hedge exposure. And when the entire technology sector was in freefall, market illiquidity made it impossible for players to dynamically hedge the enormous amount of technology derivatives (put options) that had been written over the boom (especially during the final stage of gross speculation). The buying power necessary to absorb the massive shorting necessary for derivative players to offload exposure (through shorting stocks or futures) was nowhere to be found – so much for assumptions.

Granted, derivatives can be a very effective mechanism for individual participants to shift risk to others, but a proliferation of these strategies significantly influences their effectiveness and general impact. The availability of inexpensive “insurance” heightens the appetite for risk and exacerbates the boom. This characteristic has significant ramifications for both the financial system and real economy. It also creates completely unrealistic expectations for the amount of market risk that can be absorbed/shifted come the inevitable market downturn. Many adopt strategies to purchase insurance at the first signs of market stress. Once again, the market cannot hedge itself, and the tendency is for derivative markets operating in a speculative environment to transfer risk specifically to financial players with little capacity to provide protection in the event of severe financial market crisis.

There is another key factor that greatly accentuates today’s risk of a serious market dislocation, that was actually noted by the BIS: “Net repayments of US government debt have affected the liquidity of the US government bond market and the effectiveness of traditional hedging vehicles, such as cash market securities or government bond futures, encouraging market participants to switch to more effective hedging instruments, such as interest rate swaps.”

This is actually a very interesting statement from the BIS. First, it is an acknowledgement that “liquidity” and the “effectiveness of traditional hedging vehicles” have been impaired, concurrently with the exponential growth of outstanding derivative positions. This is not a healthy divergence. We have posited that the explosion in private sector debt, having been the leading factor fueling U.S. government surpluses, has produced The Great Distortion. As such, the viability of hedging strategies such as those that entailed massive Treasury securities sales in 1994 is today suspect. There are fewer Treasuries and a much less liquid Treasury market, in the face of unimaginable increases in risky private-sector securities and hedging vehicles. And while this momentous development has not yet created significant market disruption, the true test will come in an environment of generally increasing interest rates. Rising market rates will dictate hedging-related securities sales, and will test the liquidity assumptions that lie at the heart of derivative strategies. It is certainly my view that models that rely on historical relationships between public and private debt are increasingly inappropriate in today’s bubble environment, as are the associated assumptions of marketplace liquidity. Importantly, dynamically shorting securities in the liquid Treasuries market is no longer a viable method for the financial sector to hedge the enormous

interest rate risk that they have created. The “answer” to this dilemma, apparently, has been an explosion of “more effective hedging instruments, such as interest rate swaps (from the BIS).” We very much question the use of the adjective “effective.” ...

All the same, the interest rate swaps market remains Wall Street’s favorite “Son of Portfolio Insurance.” A similar pre-’87 Crash perception of a “free lunch” conveniently opens the door to playing aggressively in a speculative market. But an interest rate swap is only a contract to exchange a stream of cash flows, generally with one party agreeing to pay a fixed rate and the other party a floating rate (settling the difference with periodic cash payments). With characteristics of writing an option, the risk of loss is open ended for those taking the floating side of the swap trade. There’s no magic here, with one party a loser in this contract in the event of a significant jump in market rates. In such an event, this “loser” will certainly plan to dynamically hedge escalating exposure. If you are on the “winning” side, you had better accept the fact that the greater your “win,” the higher the probability of a counterparty default. Somewhere along the line, these hedging strategies must be capable of generating the necessary cash flow to pay on derivative “insurance” in the event of higher interest rates. Obviously, the highly leveraged and exposed financial institutions that comprise the swaps market have little capacity to provide true insurance. In a rising rate environment, these players will have enough problems of their own making as they are forced to deal with their own bloated balance sheets, mark-to-market losses [what a quaint notion], and other interest rate mismatches, let alone enormous off-balance sheet exposure. As I have written previously, purchasing large amounts of protection against sharply higher interest rates from the U.S. financial sector makes about as much sense as the failed strategy of contracting with Russian banks for protection against a collapse in the ruble. Sure, one can play this game, but we are all left to hope that the circumstances never develop where there is a need to collect on these policies.

At some point, higher interest rates will force the financial sector to short securities to dynamically hedge the massive interest rate exposure that has been created. What securities will be sold and from where will buyers be found with the necessary \$100s (\$ trillion plus?) of billions of liquidity? Will agency securities be aggressively shorted? What are the ramifications of such a development to a market that is almost certainly highly leveraged with enormous speculative trading? I can assure you that these are questions that the derivative players would rather not contemplate, let alone discuss. ...

The problem is that the strong perception that has developed that holds that the Fed will ensure that interest rates and liquidity conditions remain market friendly is actually the key assumption fostering the explosion in interest rate derivatives and reckless risk-taking. It should be clear that the assumptions of liquidity make no sense whatsoever without the unspoken assurances from the Federal Reserve. The resulting proliferation of derivatives, then, has played a momentous role in the intermediation process whereby endless risky loans are transformed into “safe” securities and “money.” The credit system’s newfound and virtually unlimited capability of fabricating “safe” securities and instruments is the mechanism providing unbounded availability of credit – the hallmark of “New Age Finance.” It is the unbounded availability of credit that, at this very late stage of the cycle, that creates extreme risk of dangerous financial and economic distortions, including the distinct possibility of heightened inflationary pressures. **Ironically, the proliferation of interest rate derivatives has created the very conditions that they had been designed to protect against – volatility and instability in the**

underlying credit market, as well as acute vulnerability to the real economy.

The bad news is that there sure is a lot riding on what appears to be one massive and increasingly vulnerable speculation and derivative bubble that fuel the perpetuation of the historic U.S. Credit Bubble. I have said before that I see the current bets placed in the U.S. interest rate market as probably "history's most crowded trade."

Conclusion

Most economists and financial institutions assume that interest rate derivatives help to stabilize the economy.

But cumulatively, they can actually increase risky behavior, just as portfolio insurance previously did. As Nassim Taleb has shown, behavior which *appears* to decrease risk can actually mask long-term risks and lead to huge blow ups.

Moreover, there is a real danger of too many people using the *same strategy at once*. As economist Blake LeBaron [discovered](#) last year, when everyone is on the same side of a trade, it will likely lead to a crash:

During the run-up to a crash, population diversity falls. Agents begin using very similar trading strategies as their common good performance is reinforced. This makes the population very brittle...

Given that the market for interest rate derivatives is orders of magnitude larger than credit default swap market – let alone portfolio insurance – the risks of a "black swan" event based on interest rate derivatives should be taken seriously.

Anything that is orders of magnitude larger than the global economy could be risky – one unforeseen event and things could destabilize very quickly. Too much of *anything* can be dangerous. Water is essential for life ... but too much and you drown.

But I am confident that *no one* – even the people that design, sell or write about the various interest rate derivatives – really know how much of a danger they do or don't pose to the overall economy. In addition to all of the other complexities of the instruments, the very size of the market is unprecedented. Independent risk analysts would do a great service if they quantified and modeled the risk.

Finally, even if the widespread use of interest rate derivatives does not harm the economy as a whole, it will certainly harm the cities, states and other governmental and quasi-governmental entities which are on the wrong side of the trade. My hunch is that – just as the fraud in the CDO and CDS markets was exposed when the "water level" of the economy fell, exposing the rocks underneath – rising interest rates will reveal massive fraud in the interest rate derivative market.

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