When Does Innovation Go Too Far?*

Remarks by

John C. Bogle, Founder & former chief executive

The Vanguard Group

Before

The Philadelphia Federal Reserve Policy Forum

On Innovation and Regulation in the Financial Markets

Philadelphia, PA

November 30, 2007

It's hard to argue against "Something New Under the Sun," the title of a special report on innovation published only last month by the London *Economist*. The report defines innovation as "new products, business processes, and organic changes that create wealth or social welfare," that is to say, "fresh thinking that creates value." And surely we all agree that innovation, and her sister, entrepreneurship, are among the major forces that drive the growth of our global economy.

As a result of those forces, we have the internet and superhighways, ever-soaring skyscrapers, jet aircraft that are ever more fuel-efficient, and automobiles with GPS systems that not only show you how to get where you're going, but actually have a person who *tells* you how. (Or is it just a disembodied computerized voice?) The end of the information revolution is—for better or worse—not yet in sight, but it has brought us the benefits of choice beyond imagination and intense price competition that serves consumers better than ever before.

The financial sector, however, is unique in the role that innovation plays. Why? Because here there exists a sharp dichotomy between the value of innovation to the financial institution itself and the value of innovation to its clients. For it is the role of the providers of financial services to organize the instrumentalities of business and government—let's call them stocks and bonds—into packages and, well, "products" that earn profits for themselves, even as they are also designed to serve the needs of investors. Some of these products are simple and cost-efficient; others, at the extreme, are mind-bogglingly complex and expensive.

And so in this field we are eternally bound by this unarguable equation: *gross returns in the financial markets, minus the costs of financial intermediation, equals the net return actually earned by financial market participants*. This is one of the "relentless rules of humble arithmetic" that drives our system. To the extent than innovation adds costs, then, it reduces investor returns.

What's more, our institutions have a large incentive to favor the complex and costly over the simple and, well, cheap; quite the opposite of what most investors want and need. Given recent events in the financial markets in which some of our nation's—and the world's—mightiest financial institutions

*This title, which I chose last summer—before the recent unpleasantness in the credit markets—turned out to be prophetic. But it's probably just luck.

Note: The opinions expressed in this speech do not necessarily represent the views of Vanguard's present management.

have collectively already taken some $47 billion (estimated to total $77 billion when all's said and done) of write-downs from their forays into relatively new, untested and complex financial instruments, there can hardly be a more fitting time to consider whether innovation has again gone too far.

The Financial Sector—Costs and Benefits

Unlike the technology sector, where consumer costs decline as innovation leads to greater efficiency, the costs of our financial sector are soaring. I estimate that the costs of the system—the $100 billion annual expenses borne by mutual fund investors; plus those hundreds of billions of dollars of brokerage commissions and investment banking fees; plus all those staggering fees paid to hedge fund managers (the 25th highest paid of whom earned $130 million last year), and those legal and accounting fees, all those marketing and advertising costs, come to something like $530 billion last year, up from a mere $100 billion in 1990.

Does this explosion in intermediation costs create an opportunity for money managers? You better believe it does! Does it create a problem for investors? You better recognize that too. For as long as our financial system delivers to our investors in the aggregate whatever returns our stock and bond markets are generous enough to deliver, but only *after* the costs of financial intermediation are deducted, these enormous costs seriously undermine the odds in favor of success for our citizens who are accumulating savings for retirement. Alas, the investor feeds at the bottom of the costly food chain of investing.

This is not to say that our financial system creates only costs. It also creates substantial value for our society. It facilitates the optimal allocation of capital among a variety of users; it enables buyers and sellers to meet efficiently; it provides remarkable liquidity; it enhances the ability of investors to capitalize on the discounted value of future cash flows, and of other investors to acquire the right to those cash flows; it creates complex financial instruments that enable investors to divest themselves of risks they prefer not to assume by transferring them to others who are willing to bear them. No, it is not that the system fails to create benefits. The question is whether, on the whole, the costs of our financial sector have reached a level that overwhelms its benefits.

The on-going crisis we are now facing in two relatively recent innovations— collateralized debt obligations (CDOs, backed by pools of mortgages) and specialized investment vehicles (SIVs, essentially money market funds that borrow short and lend long)—are examples of the complex—and costly—vehicles created by our financial sector. Banks like getting paid large fees for lending money, and when they can quickly get the loans off their own books and into public hands (so-called "securitization"), it can hardly be surprising that they aren't much concerned about the credit-worthiness of those families for whose homes they have provided mortgages.

With the endorsement—and, I would argue, the complicity—of our rating agencies, this financial legerdemain created a modern version of alchemy. The *lead,* as it were, was a package of say, 5,000—let's call them B-rated—mortgages, miraculously turned into the *gold*, as it were, of a $100-million CDO with (in one typical case) 75 percent of its bonds rated triple-A, 10 percent rated double-A, 5 percent rated A, and only 10 percent rated double-B. (Hint: we now know that, despite the risk-reducing character of such broad diversification, lead is still lead.)

Derivatives

Innovation in the financial sector, of course, has included the development of an enormous market of financial derivatives. Hear Warren Buffett's description:

> "Essentially, these financial contracts call for money to change hands at some future date, with the amount to be determined by one or more reference items, such as interest rates, stock prices or currency values. If, for example, you are either long or short an S&P 500 futures contract, you are a party to a very simple derivatives transaction—with your gain or loss *derived* from movements in the index."

Mr. Buffett picked a good example. In fact, the value of derivatives on the S&P 500 Index — futures and options; in essence, speculation on the future price of the Index—is now said to total $23 trillion compared to the $13-trillion actual market value of the 500 Index itself. The "expectations market," then, is almost double the value of the "real market." However striking that relationship, these derivatives are a mere drop in the bucket of the global total of some $500 *trillion* in financial derivatives of all types; as a point of reference, the gross domestic product (GDP) of the entire world is about $50 trillion, a mere one-tenth of the derivative total.

Back in 2003, a remarkable debate about derivatives occurred between two men who were likely the two most respected leaders of the entire financial community: Warren Buffett and Alan Greenspan. (Did I overstate their reputations? I don't think so.) Here's roughly how "The Motley Fool" website reported it:

> Warren Buffett and Fed head Alan Greenspan have thrown out some fighting words on derivatives. Buffett called them "financial weapons of mass destruction." Greenspan said, "The benefits of derivatives have far exceeded their costs." Buffett's letter to shareholders devoted a whole section to derivatives, their abuse, and the great financial risk they represent both to the parties using them and to the economy as a whole, saying that derivatives could lead to huge financial turmoil for the markets.
>
> For Buffett, derivatives' hard-to-quantify off-balance sheet presence makes it difficult to figure out a financial institution's true market risk exposure—lurking like a looming iceberg beneath the economy's waters. Greenspan countered directly by saying that most banks manage their risks just fine. Financial institutions use vehicles like swaps and futures to hedge their interest rate and market exposures, pointing out that the prudent use of derivatives has helped banks survive the recession by reducing risk.
>
> Buffett thinks they represent a huge risk to the economy and that some sort of further regulation is needed. Greenspan believes that the market can handle derivative risk, and that more regulation could create a moral hazard, actually encouraging banks to assume more risk instead of less.
>
> Who's right? They both are, in a way. But so far the use of most derivatives goes unnoticed because nothing catastrophic has happened. This is a battle that's likely to go on and on, with both sides holding fast to their positions until proven wrong by another big market event.

Well, four years later, that "big market event" is upon us. The innovation of derivatives has enriched the financial sector (and the rating agencies) with enormous fees, and these over-rated, as it were, CDOs have wreaked havoc on the balance sheets of those who purchased them, including the banks and brokers themselves. They too bought them, and in the end, with many of them still on their books, were left holding the bag,.

What is more (if we need more!), the SIVs have also created havoc. For it turns out that to sell these instruments, our banks increasingly issued "liquidity puts" to buyers, guaranteeing to repurchase them on demand at face value. Citigroup, it turns out, was not only holding $55 billion of CDOs on its

books, but also some $25 billion of SIVs that have been "put" back to the bank, a fact not publicly disclosed by Citi until November 5. Astonishingly, Robert Rubin, chairman of Citi's Executive Committee (and a man, one might say, of not inconsiderable financial acumen) has stated that until last summer *he had never even heard of liquidity puts*. (Not quite as embarrassing as former chairman Charles Prince's earlier comment: "As long as the music is playing you have to keep dancing. We're still dancing.")

Innovation in the Mutual Fund Industry

If innovation has again gone too far in the banking sector, that sector is hardly alone. Innovation has also gone too far in the mutual fund industry. When I entered this industry way back in 1951, it was overwhelmingly dominated by equity funds holding a diversified list of blue chip stocks; investing for the long-term (15 percent portfolio turnover); operated at modest expense ratios (averaging about 75 basis points); and pretty much closely tracking (before costs, of course) the returns of the stock market itself. We were an industry that sold what we made, and we valued management over marketing, stewardship over salesmanship.

And then we decided to innovate. It was the mid-1960s when the mutual fund sector began to stray from its commonsense charter that had served investors with reasonable—if not quite optimal—effectiveness. Innovation in the "Go-Go Era," circa 1965-1968, saw the proliferation of scores of new "aggressive growth" funds, focusing on stock prices rather than business values; buying "concept" stocks and trading them with rapidity; and often holding "letter stocks" bought from corporate principals at discounted prices, only to immediately mark-up those prices to market value, illicitly inflating fund performance. Of course such an approach was destined to fail. But with the heady returns these funds reported, investors poured billions of dollars into them before it did so. While fund managers prospered, fund investors were ill-served.

When the "Go-Go" era, well, "Went-Went," it was quickly replaced by the "Favorite Fifty" Era, where the idea was to hold established growth stocks which (if one could ignore the certain decay that high growth rates inevitably experience) would provide permanent performance success. But of course by the time that eager fund investors had jumped on that bandwagon, the ride was over. The stock market crashed by 50 percent in 1973-74. While investors were once again impoverished, managers were once again enriched.

In the aftermath of the crash, with equity funds in net redemption, the industry came up with still more innovations. They included "Government-Plus Funds," which provided unrealistically high payouts by claiming that premiums on covered call options were "earnings." Grossly over-sold to investors and based on a strategy that could not consistently succeed, these funds raised $30 billion from investors—at one point nearly 10 percent of industry long-term assets—and then quickly collapsed. Within a few years, they had literally vanished from the scene, never to be seen again. Again, investors paid a heavy price.

During the next few years, we dreamed up short-term Global Income Funds and Adjustable-Rate Mortgage Funds. (Shades of the recent crisis!) While these funds were hardly identical, they had several common characteristics: they offered income that could not be—and was not—sustained; they jumped on current fads in the marketplace; and they charged premium fees, as well as heavy sales loads. Together they attracted nearly $50 billion of assets, generated huge fees to managers and distributors, and ultimately failed investors. They too soon vanished.

New Economy Funds and the Bubble

More recently, in the later 1990s (you must be getting the picture by now), innovation in the mutual fund sector was designed to capitalize on the innovation of the so-called "New Economy" of the Information Age. We created literally hundreds of technology funds, telecommunication funds, internet funds, and, once again, "aggressive growth" funds whose holdings were dominated by stocks in those sectors. Aided by a soaring market, aggressive advertising and promotion, and, yes, investor greed, nearly a half-trillion dollars poured into these funds during the three-year-bubble surrounding the market's peak in March 2000. And then came the great bear market, another 50 percent decline in which the NASDAQ ("New Economy") Index dropped nearly 80 percent, and the NYSE ("Old Economy") Index fell by 33 percent.

We actually can measure how costly this short-lived bubble was for fund investors. Let's compare the returns reported by the *funds themselves* ("time-weighted" returns) to the returns actually earned by *fund investors* ("dollar-weighted" returns) during the ten years ended December 31, 2005. The 200 funds that enjoyed the largest cash inflows (about two-thirds of the equity fund total—clearly the better performers in the bull market—*reported* an annual rate of return of 8.8 percent—slightly below the 9.2 percent return on the S&P 500. But the return *actually earned* by the investors in these funds was 2.4 percent, a lag of 6.4 full percentage points per year below the 8.8 percent return the funds reported.

Cumulatively, then, these fund investors experienced but a 27 percent *increase* in their capital over the decade. Yet, simply by buying and holding the market portfolio through an index fund, they would have produced an increase in capital of 141 percent. Thanks to the innovation and creativity of fund sponsors, then, investors lost an astonishing 114 percentage points of return relative to the market itself. So much for the well-being of investors! As to the well-being of managers, we can roughly estimate that the total fees and sales loads (excluded from our calculations, which therefore *understates* the gap) paid to fund managers and distributors (including brokers) totaled in the range of $20 billion. So yes, to answer the question posed by the title of these remarks, even as in the banking and derivative sectors of our financial economy, innovation has gone too far in the mutual fund sector.

And the Beat Goes On

One might have hoped that the fund industry would have learned from its past history of over-reaching innovations. But the evidence goes the other way. In recent years, we've created "130/30" funds, in which managers implicitly suggest that over-investing the traditional 100 percent long position in stocks by 30 percentage points, offset by a 30 percent short position, will produce higher returns. Maybe yes, maybe no—only time will tell—but the drag of the higher fees on these funds is a certainty. Another innovation is a variety of fixed-payout funds in which specific rates of annual withdrawals are offered, along with a warning that these payouts may, over time, exhaust the investor's capital. (One can only hope that warning is in large boldface type.)

Other innovations have included tax-deferred variable annuities that assure continued payouts (as a percentage of a fluctuating asset value), a perfectly good idea—except that the grossly excessive costs, commissions, surrender charges, etc., that burden most of these "products" have proved to erase much of their alleged advantage. And we also see new equity indexed annuities, usually providing only a portion of the stock market's return while guaranteeing a minimal annual return in the 1 percent to 3 percent range. Even a rudimentary financial analysis suggests that these modest added values are unjustified by costs (and sales practices) that are anything *but* modest.

Of course the major innovation of the recent era is the exchange-traded fund (ETF). I suppose there's nothing wrong, as such, with an index fund that can be traded (as the advertisements say) "all day long, in real time." But I have to wonder why any serious investor would want to do such a crazy thing. Clearly, frequent trading is the artillery of the speculator, not the investor; what's more, the vast majority of ETFs today—some 675 out of 690—are focused not on the traditional broad market indexes, but on

narrow market sectors and individual foreign countries. (There are also some ETFs that claim to beat the market; I'll leave to wiser heads to wonder about the validity of such claims, and how on earth they can call themselves *index* funds.) As mutual fund managers have become primarily mutual fund marketers. ETFs are enriching the coffers of financial entrepreneurs, fund management companies, and stockbrokers; it remains to be seen whether they'll enrich the investors who trade them.

But Some Innovation Has Served Investors

To be sure, not all mutual fund innovation has ill-served fund investors. Indeed, among the greatest innovations is our industry's history was the money market fund. The first one gingerly began in 1971. But—simply by giving investors the true money market rate (less costs), rather than the regulation-limited rates offered on bank savings accounts—assets had burgeoned to $58 billion by 1979, reaching $237 billion at the peak in 1981, and accounting for fully 80 percent of mutual fund assets! It was money funds that gave the industry breathing room after the 1973-74 bear market until stocks began their powerful and sustained recovery after the 1987 market crash.

Money fund assets total $2.8 trillion today, accounting for about 24 percent of industry assets. They remain a major factor in the financial markets and a remarkable service to investors. Yes, money funds have also created huge profits for fund managers. But in a sector in which the linkage between fund costs and fund returns is not only essentially dollar-for-dollar, but also clearly visible on a daily basis, (simply by comparing relative yields), investors are heavily opting for the lower-cost funds. Nearly one-half of total money fund assets are invested in funds with expense ratios of less than 40 basis points. (Astonishingly, 68 money funds, including that very first fund, get away with ratios of 100 basis points or more.)[*]

A Self-Serving Conclusion

There are some mutual fund innovations, however, that have well-served fund investors even as they have created no profits for fund managers. I'll now name six major innovations that meet that standard. (Full disclosure: these comments are self-serving, in that they involve my creation of Vanguard, way back in 1974.) The first is the creation of Vanguard itself, an astonishing innovation in the traditional mutual fund structure, an innovation designed to resolve the dilemma that must be patently obvious after the events that I have chronicled this afternoon: *the direct conflict between the interests of fund managers, who make money by gathering assets, no matter what their character or durability; and fund investors, whose interests are ill-served by that strategy.* It is a simple truism that, for the fund industry *in toto*, "the more the managers *take*, the less the investors *make.*"

The seminal Vanguard innovation was to reverse that tautology: "the *less* the managers take, the *more* the investors make." And so we created our novel and unique structure. Rather than having the mutual funds run under contract by the investment manager (the industry's traditional structure), in business to earn a profit on *its own* capital, at Vanguard the mutual funds would actually *own* their management company operating to serve solely the interests of its fund investors, offering its services on an "at-cost" basis, and in business to earn a profit on *their* capital.

This structure may not be—and is not—entirely conflict-free. But the proof of the pudding is in the eating: Vanguard today operates at a weighted expense ratio of about 21 basis points, compared to about 95 basis points for the fund industry. Applying this differential of 74 basis points to our present asset total of $1.3 *trillion*—up from $1.4 *billion* when we began—means savings of nearly $10 billion

---

[*] I don't have time to discuss in depth another promising fund innovation: "Target retirement funds," in which the investor selects his year of retirement and the fund gradually moves from a heavy equity position to a substantial bond position as retirement nears.

dollars *per year* to our fund investors. That's enough savings to keep our money market and bond funds consistently in the 95th (or higher) percentile among their peers, and to place our equity funds fairly consistently in at least the 75th percentile in terms of the returns we generate for our shareholder/owners.

It is that innovation—based on the common sense observation that *costs matter,* and that funds should be, well, "of the shareholder, by the shareholder, and for the shareholder"—that has engendered the other major innovations that we have been responsible for over the years. By far the most important of these was our second strategic innovation. Immediately after Vanguard began operations in May 1975, we created the world's first market index mutual fund, simply tracking the returns of the S&P 500 Stock Index.

To do its job, the basic index fund takes diversification to the nth degree. It owns the lion's share of the entire U.S. market, and thus assures that its investors are guaranteed to capture the gross return of the stock market (or the bond market, or any discrete segment of each). But if this diversification assures that the index fund *earns* the market's return, it is rock-bottom costs that assure that it *delivers* to its investors nearly 100 percent of whatever returns the market may provide. (With its passive strategy, it also virtually eliminates portfolio trading costs, and also provides commensurate tax efficiency.) As Warren Buffett says, "When the dumb investor realizes how dumb he is and buys a low-cost index fund, he becomes smarter than the smartest investors."

Our third major innovation was a *reverse* innovation. Early in 1977, shortly after the index fund began operations, we eliminated the sales loads on all Vanguard Funds, moving from a *supply-driven* broker-dealer selling system to a *demand-driven* system dependent on investors' buying decisions. That change was designed in part to eliminate any incentive to create those fad-and-fashion funds that so devastated the returns of investors in the earlier eras I've described.

Our fourth innovation, also precedent-breaking, came in the bond fund sector. Up until 1977, bond funds were just that: "managed" portfolios of bonds whose maturities could be extended or reduced depending on the portfolio manager's outlook for interest rates. But skeptical that bond managers had—or ever *could* have—such prescience, we again did the obvious. We launched the industry's first defined-maturity series of bond funds, including a long-term portfolio, a short-term portfolio, and (I'm sure you know what's next!) an intermediate-term portfolio, all operated at rock-bottom cost. The idea was to hold broadly diversified portfolios of top-quality bonds (first tax-exempt municipals, later taxables), and maintain essentially constant maturities in each category. That simple concept of defined-maturity segments revolutionized the bond fund sector, and the three-tier bond portfolio quickly became the industry standard.

Our fifth major innovation came in 1992, when we determined to share the obvious economies of scale generated by our largest shareholders. It began with the creation of Vanguard "Admiral" funds, which slashed expenses for large shareholders in our newly created series of U.S. Treasury bills, notes, and bonds, a concept which would later spread to similar Admiral share classes in most of our other funds, to the benefit of these key owners.

The sixth major Vanguard innovation—my final example today—is one that, like our bond innovation, would quickly be widely imitated (except, of course, for the low costs): Our creation in 1993, of the industry's first series of tax-managed funds. Unnecessary taxes are this industry's Achilles Heel, and we determined to create three funds that would serve the industry's taxable investors, incorporating both minimal costs and maximum tax efficiency. This series of funds is one more innovation that has sprung from our unique organizational structure. But despite the power of our early innovation, the unremitting growth in our market share, and the growth in Vanguard assets to $1.3 trillion, that structure has yet to be emulated by a single one of our competitors. (Think about why that might be.)

Wrapping Up

Whether in banking or mutual funds, innovation has always been—and remains—a two-edged sword. I am not alone in this view. Consider these prophetic words of the eminent financier Henry Kaufmann, from his fine book *On Money and Markets*, published in 2001. "Only by improving the balance between entrepreneurial innovation and more traditional values—prudence, stability, safety, and soundness—can we improve the ratio of benefits to costs in our financial system."

So yes, our financial system surely provides ample "fresh thinking that creates value," just as that *Economist* article on innovation that I mentioned at the outset suggested. But while financial innovations nearly always *create value* for those who devise, construct, promote, and market them, far too many of these innovations have *subtracted value* from investors who have trusted their creators and sponsors and invested in them, with damage that has now gone even further, into our society at large. It is time to face up to these realities.