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1984

Of Financial Innovations and Excesses

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ONE OF THE BEDROCKS of our financial system is financial innovation, the life blood of efficient and responsive capital markets. Even a casual review of the changes that recently have occurred in the financial services industry leaves one in awe. The last six years have witnessed the greatest number of financial innovations in our nation's history, reflecting vitality and the forces of competition. In this address, I wish to consider financial innovation in the good and in the bad. There is much good, as I think we will come to agree. However, some things labelled financial innovations have little or no substance when we peel away the veneer, other than to their promoters.

I. Foundations for Innovation

Briefly reviewing, a financial innovation may be either a new product, such as zero coupon bonds, or a new process, such as a new delivery system for electronics funds transfer. With financial innovations, very seldom do we observe the introduction of something entirely new. Rather, innovation typically involves modification of an existing idea, either a product or a process. The dramatic technological breakthroughs that occur in the product markets usually are not found in the financial markets.

For an idea to be viable as a financial innovation, it must make the markets more efficient in an operational sense and/or more complete. The purpose of financial markets, of course, is to channel the savings of society to the most profitable investment opportunities on a risk-adjusted return basis. These opportunities may originate in the private sector, and involve a rate of return on investment, or in the public sector, where a social return is involved. In all cases, there is a cost to the financial intermediation process by which savings flows are allocated; the process is not frictionless. This cost is represented by the difference, or spread, between what the ultimate saver receives for funds and what the ultimate borrower pays (holding risk constant), as well as by the inconvenience to one or both parties.¹ A financial innovation may make the market more efficient by reducing the cost of financial intermediation to consumers of financial services. Either the spread, as defined above, is lowered or inconvenience costs are reduced.

A second foundation for financial innovation is the movement toward market completeness. A complete market exists when every contingency in the world

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¹ As these notions are well known and further explanation is found in Van Horne [18], Chapter 1, I do not dwell on them.

corresponds to a distinct marketable security.² In contrast, incomplete markets exist when the number and types of securities available do not span these contingencies. In other words, there is an unfilled desire for a particular type of security on the part of an investor clientele. An example would be the desire for zero coupon bonds by pension funds prior to 1981. If the market is incomplete, it pays a financial intermediary or a direct borrower to exploit the opportunity by tailoring security offerings to the unfilled desires of investors, whether those desires have to do with maturity, coupon rate, protection, call feature, cash-flow characteristics, or whatever. As with most things, it is a matter of degree. The sheer number of different types of securities necessary to make the market truly complete is bound to result in an incomplete market in the real world. The issue is whether a sufficient number of time-state claims exist to make the market reasonably complete, not entirely so.

Thus, financial innovations occur in response to profit opportunities which, in turn, arise from inefficiencies in financial intermediation and/or incompleteness in financial markets. If markets are truly competitive, the profitability of a financial innovation to its original promoter will decline over time. A profitable innovation, of course, invites others to enter the marketplace with a like product or process. As this occurs, promoter profit margins erode and financial service consumers increasingly benefit vis-à-vis the promoter. In other words, as a financial innovation becomes seasoned, promoter profit margins decline, and the benefits of the innovation increasingly are realized by the consumer. At least that is how it should work, and usually does.

II. Stimuli for Change

In steady-state market equilibrium, it would not be possible to make the market more efficient and/or more complete. Within the boundaries of search costs, all opportunities for profitable exploitation through financial innovation would be exhausted. Indeed, an unchanging world would be marked by a lack of new financial products and processes. The environment must change for there to be exploitable opportunities and for us to witness widespread financial innovation. During the last six years, a confluence of events has created a receptive atmosphere for financial innovation. With each important change in atmosphere, a flurry of activity occurs, the sum of which can only be described as dazzling. Changes which prompt financial innovation include: (1) volatile inflation rates and interest rates; (2) regulatory changes and circumvention of regulations; (3) tax changes; (4) technological advances; (5) the level of economic activity; and (6) academic work on market efficiency and inefficiencies. While there may be disagreement as to their relative importance, most people agree that these factors are highly influential.³ Let us consider them in turn.

With volatile inflation and fluctuating nominal and real rates of interest, new products are designed to reduce such risk. Put another way, a changing inflation

² See Hirshleifer [7], Chapter 9, for additional explanation and mathematical expression.

³ See Silber [14], who categorizes a number of financial innovations as to exogenous cause.

and interest-rate environment creates demand for different types of financial instruments. New deposit and investment accounts as well as floating rate loans are examples of responses to these stimuli. In part, the trend toward increased negotiability of financial instruments is the result of interest-rate volatility. The considerable variability of inflation and interest rates over the last ten years has caused reevaluation of existing financial instruments with new and, oftentimes, better instruments being proposed.

The second factor, regulatory change and circumvention of regulations, also has prompted many a financial innovation. Beginning in the early 1970's, a number of innovations occurred simply to get around existing regulations. In the late 1970's and accelerating rapidly in the 1980's, we have had deregulation of the financial services industry. Boundaries that functionally separated financial institutions were lowered and, in a number of cases, removed altogether. When constraints are reduced, of course, market participants enter new lines of business possessing previously unattainable profit and/or risk reduction possibilities.⁴ On the other hand, when constraints are first imposed, or existing restrictions increased, portfolio adjustments also occur. Here financial innovation tends to be defensive in nature, aimed at restoring profitability and/or at risk reduction.

In recent years, most regulatory changes have reduced or removed restrictions. With financial deregulation, the distinction between commercial banks, savings and loan associations, investment banks, insurance companies, mortgage bankers, large retailers, and financial conglomerates, e.g., American Express, has blurred. Alas, it no longer is possible for a financial institution to remain in a nice, safe niche. With each step down the deregulatory road, financial innovation becomes increasingly necessary for survival.⁵ This powerful force has been one of the most important stimuli for change. Only recently has it been blunted by the aftershocks of the Continental Illinois debacle. In addition to domestic deregulation, many capital and currency constraints to international borrowing and lending have been reduced.

The third factor, alteration in tax laws, also motivates financial innovation. When after-tax returns on financial instruments are impacted by tax legislation, new financial products often emerge as do revisions in existing products. In particular, changes in the differential taxation of interest and dividend income versus capital-gains income affects the market equilibration process, often in dramatic ways. In turn, this opens things up for financial innovation. The closing of tax loopholes, as occurred in the Deficit Reduction Act of 1984, also alters market equilibrium in restricting the use of certain financial products. As a result, new degrees of market incompleteness are introduced. The final form and effect of the 1985 Tax Act remain to be seen.

Technological advances provoke process change more than they do product change. The computer age has brought with it a continual broadening of applications to the financial services industry and a lowering of costs per transaction.

⁴ Silber [15], pp. 64–66, portrays financial institutions as maximizing a utility function subject to constraints. As the constraints are changed, the shadow prices change. Financial innovation is said to be an adaptive response to these shadow price changes.

⁵ For an excellent analysis of the effects of deregulation, see Gart [6].

Electronic funds transfers, automatic teller machines, point-of-sale terminals, credit-card data processing, personal computers which permit in-home financial transactions, and telecommunications all have changed dramatically the way financial products are provided and the way they are priced. Speed and accuracy per transaction are increased, and structural costs have been lowered through automation. In most areas of financial service, efficiency in delivery is crucial.⁶ Less efficient producers are left behind in the competitive arena. While there is a place for financial boutiques in special niches, the overall financial services industry is dominated by cost effectiveness. The shakeout continues, and most agree that there will be fewer financial service providers in the future than there are now.

Changes in the level of economic activity may stimulate financial innovation. In a period of economic prosperity, many financial institutions are eager to try new ideas in their relentless pursuit of growth. However, in a steep recession, such as occurred in 1981 to 1982, the emphasis shifts to risk reduction and liquidity. To take international banking as an example, the financial innovations which occurred in the 1970's were mainly directed at business expansion. Currency option loans, parallel loans, special swap arrangements, and many other innovations were undertaken in the quest of higher loan volume. New business, generally at low spreads, was the result. With the surfacing of problem loans to developing countries in the 1980's, the posture of international banks changed to "battening down the hatches" through risk reduction moves. What innovation that occurs is largely in this vein.⁷ This tendency is accentuated by domestic loan problems. In summary, variation in the level of economic activity affects not only the magnitude and type of funds needed, but also the risk attitudes of financial institutions and other market participants. In turn, these affect financial innovations in our society.

Last, but certainly not least, is all of the academic work on asset pricing, options, interest rates, futures markets, and derivative securities. The financial community has become increasingly receptive to these ideas, as it is clear that it can profit from them. Also, as more MBA and other students trained in modern finance become a part of the financial community, they prompt changes along such lines.

III. Some Financial Innovations

Thus, the stimuli to financial innovation are many. In response, a vast number of innovations have occurred during the past six years. Some of the better known are shown in Table I, according to whether the innovation was a product or a process. Similar to Silber [14], I have endeavored to categorize these more recent innovations as to primary cause(s). The numbers to the right represent the six factors described before. The more basic foundation, of course, is the opportunity to make the market more efficient and/or more complete and, by so doing, realize a profit and/or reduce risk. The profit/risk reduction motive is the fundamental

⁶ For an overall evaluation of the effect of computers and telecommunications technology on the financial services industry, see Shrivastava [13].

⁷ See Prussia [12] for a discussion of this point.

Table I
A Partial Listing of Recent Financial Innovations
(1978–1984)

	Primary Cause ^a
Products	
Money market investment accounts	1, 2
Super NOW accounts	1, 2
Interest rate and stock index futures markets	1, 2, 6
Options on futures contracts	1, 2, 6
Municipal bond mutual funds	1, 3
Zero coupon bonds and coupon stripping	1, 6
Adjustable rate preferred stock	1, 3
New variations of adjustable rate mortgages	1, 2, 6
Securitization of pass-through and other mortgages	1, 2, 5
IRA accounts	3
Universal life insurance policies	1
Currency option loans	1
Interest rate swaps and currency swaps	1
Forward interest rate loan contracts, with ceilings and floors	1
Bonds with put options	1, 3
Issuance of and investment in high-yield (junk) bonds	1, 6
Processes	
Automatic teller machines	2, 4
Point-of-sale terminals	4
Financial transactions by personal computer	4
Shelf registrations	2
Electronic security trading	2, 4
Electronic funds transfer	4
New variations in credit card processing	4

^a Cause notation: 1, volatile inflation and interest rates; 2, regulatory; 3, tax law change; 4, technological advance; 5, level of economic activity; and 6, academic work.

reason behind the financial innovations observed. The first five external factors change the environment in which profit and risk reduction opportunities arise. The sixth, academic work, is more fundamental in its influence.

In Table I, we see that innovations often were prompted by changes in more than one factor. For products, a dominant theme is volatile inflation and interest rates. For processes, the major cause is technological advances. As one reflects on this list of well-known financial innovations or, for that matter, on any similar listing, most of us would agree that our financial system is well served by their occurrence. In the face of so much change, financial innovation is absolutely essential if markets are to serve their vital role in the overall financial services industry. But all is not rose-colored.

IV. Alleged Innovations and Excesses

There has been a recent wave of enthusiasm for financial innovation. This enthusiasm is not surprising in view of the changing financial environment in which we live and all the innovations that have gone before. Nowadays, almost any proposal gets a receptive ear, unlike the past when proposed changes were viewed with innate skepticism. Never has the time been riper for new ideas. Certainly, this reduction in hostility benefits the financial markets to some extent.

However, it also allows certain deals to be masqueraded as financial innovations. When the mask is removed, we find little or no substance. Still other ideas have substance, but the promoters have eaten not only the icing of the cake but also the cake itself. Yet promoters continue to be invited to the financial innovation ball, although perhaps only with new masks. The eagerness of financial-service consumers for almost anything new has allowed investment banks and other financial institutions to propose things lacking in the foundation of making the financial markets more efficient operationally and/or more complete. Indeed, there appears to be little reluctance to try out a new product or process, no matter how far out it might seem or how rich it is priced.⁸

Understandably the promoter wishes to make a profit regardless of whether an idea has substance. As long as people believe the proposal is a panacea for certain ills, promoters will exploit the opportunity. However, I find disturbing the case being made for such things as: defeasance; certain interest-rate swaps; schemes to dedicate bond portfolios in such a way as to take money out of a defined benefit pension plan; financial institutions issuing put options against new and existing bonds in order to alter accounting income; equity-for-debt swaps; the sale of high-yield (junk) bonds to savings and loan associations; and leveraged buyouts, whether financed with loans or with junk bonds. Many are designed to produce accounting profits with little or no economic gains.

And yet alleged innovations continue to be sold with handsome fees to the promoters and, in mirror image, costs to the other parties involved. With the large number of bright people at investment banks and other financial institutions, it is not surprising that new ideas are continually spawned. The surprising part, at least to me, is that some of them can be sold as financial innovations when, upon close inspection, we find that they are not. In light of the rapid changes in the external environment, there are bound to be bad as well as good ideas in the on-going quest for true financial innovation. However, we would expect ideas without underlying substance to languish. How then do we explain their flourishing along with ideas that we all would agree are true financial innovations? How do we explain the very high and relatively long-lasting promoter profits associated with certain true financial innovations? Are not the financial markets rational and competitive?

I am not sure I have so much answers to these questions as I do an observation. The enthusiasm for new ideas seems to me to have resulted in excesses. To a

⁸ Kaufman [9] likens such introductions to new clothes designs where there is great demand to wear a first-of-a-kind outfit. While many do not go into mass production, there is still high initial interest.

degree, a “herd” instinct appears. In the case of the corporation, a manager does not want to miss out on a perceived good thing if everyone else is doing it. Savings-and-loan association, commercial-bank, and insurance-company executives are attracted to a new repackaging of mortgaged-backed securities, even though they could manufacture essentially the same thing themselves at a lower cost. Like ants attracted to the honey pot, this is a bonanza for financial promoters. Each time a defeasance plan, leveraged buyout, or new type of mortgage-backed security is sold, substantial promoter fees are realized. But do they make money the old fashioned way by earning it? I think not in many cases.

V. Bubbles and Balloons

Is there a bubble effect that allows an idea to be paraded in the guise of a financial innovation? We all are reminded of some of the famous bubbles of the past: the South Sea Company in England in the early 18th century, originated supposedly as a monopoly on trade to the south seas; tulipmania in Holland in the 1630s, where a single tulip bulb once sold for many years’ salary; and the electric utility boom in this country in the 1920’s, which permitted excessive pyramiding of stock values.⁹ It is difficult to make the case that a speculative bubble of this type is prevalent in ideas paraded as financial innovations. Perhaps some euphoric excesses, or as Adam Smith would say, “over trading,” but not bubbles as usually defined.

A bubble, of course, implies an eventual bursting. If the time and magnitude of the burst were known in advance, all participants would be so guided. With completely rational expectations, bubbles simply would not occur.¹⁰ A bubble depends on irrational behavior at least part of the time, with prices rising in anticipation of a further positive expected rate of price change. Such price movements eventually occur independent of any fundamental valuation principles, and further speculative price increases become a self-fulfilling prophecy.¹¹ The psychology of the crowd simply takes over and prices rise. Market values deviate from fundamental values, based on the information set available at the time. In a given period, the bubble will either remain, and usually by so doing grow bigger, with probability x or burst, with probability $1 - x$.

The longevity of a bubble typically depends on how long it has lasted to date as well as on any special news. Eventually, those with inside information and/or with an eye to the fundamentals begin to withdraw. Others come to the realization that the price will not go higher and there develops a race to get out. The ensuing panic brings with it a sharp price drop and by definition, the bubble is burst.¹² In effect, no more suckers can be found. Therefore, a bubble implies irrational

⁹ For detailed descriptions of the first two bubbles, see Mackay [11], Chapters 2 and 3 of a book originally published in 1841. For the electric utility situation, see Williams [19], Chapter 25. See also Kindleberger [10] for a lively description of historical bubbles and financial panics.

¹⁰ For proof of this proposition within rational expectations equilibrium, see Tirole [16].

¹¹ Flood and Garber [4] develop a linear model for analyzing bubbles in the market for foreign exchange and gold monetization.

¹² For a modeling of this phenomenon, as well as an attempt to identify bubbles through analysis of variance bounds being broken, see Blanchard and Watson [3].

behavior. While initially people may behave in a rational manner, a speculative fever eventually grips them. The euphoric atmosphere results in price rises in excess of what the fundamentals would dictate. Eventually the bubble bursts and the price debacle which follows brings misery to those left holding the bag.

The various devices recently conceived and sold as financial innovations are not bubbles, although some of the same excesses are present. Despite the excessive zeal with which I believe "hot" ideas are bought, there is not nearly the devastation that is wrought by the bursting of a speculative bubble. A balloon might be a better metaphor for certain financial promotions. It is blown up to be sure, but not to the extent it pops. The eventual deflation is less abrupt.

For example, the Federal Home Loan Mortgage Corporation (FHLMC; Freddie Mac) introduced collateralized mortgage obligations (CMOs) in 1983, a product that essentially divides mortgage-backed securities into up to four maturity groups. In addition, the FHLMC guarantees a minimum cash flow against excessive prepayment and certain default risk, so there are benefits to the investor other than just cash-flow repackaging. While the initial offerings yielded about 100 basis points less than comparable pass-through mortgage investments, that spread declined to 40 basis points by 1984. Competition and increasingly wiser investors simply let some of the air out of the balloon. Clearly, CMOs offer benefits to the parties involved, so there is a foundation for their existence. However, the initial pricing and reception by the market mainly rewarded the promoter. Whether this large initial profit was the result of asymmetry in sophistication between worldly wise promoters and less sophisticated thrift-institution executives, as suggested by Kaufman [8], is conjecture. These managers appear no more eager than others to swill the heady brew of a dazzling new financial instrument.

Another example of a balloon was the 1982 to 1984 explosion of instruments tailored so the corporate investor could take advantage of the 85 percent tax exemption of dividend income. Adjustable rate preferred stocks (ARPS), ARPS mutual funds, stock funds which hedge risk through options and pass the dividend income along to the corporate investor, convertible adjustable preferred stock (CAPS), and convertible exchangeable subordinated debentures were manifestations of this phenomenon. Never have financial promoters shown greater imagination; they lifted the tax avoidance industry to a new level of illusion. As might be expected, promoter fees were high, but initial demand proved extraordinary. For adjustable rate, preferred stocks investor excesses were particularly evident. At the peak in February of 1983, an ARPS security was priced with an adjustable return nearly 500 basis points below the yield on the appropriate benchmark, Treasury security. At that point, the balloon quickly deflated, and the negative differential declined. The 1984 Tax Act further deflated this balloon, but opportunities have not been extinguished.

Other examples of balloons could be illustrated, but they would tell much the same story. To be sure, many of the things proposed are financial innovations in that they have the potential to make the financial markets more efficient and/or more complete. Because of excessive zeal on the demand and/or supply side, however, the benefits to financial-service consumers are either wiped out by

promotion fees or reduced substantially by them. Still other promotions are lacking in economic foundation and appeal to different instincts, often accounting related.

VI. Cost of Excesses

What are the costs of balloons and various alleged but unfounded financial innovations? They are the out-of-pocket expenses paid to promoters and investment managers together with certain dislocations in resource allocation. To the extent that promoter and other fees are excessive, this lessens or, in the extreme, eliminates the benefit of an innovation to consumers of financial services. With respect to dislocations, when decisions are geared to accounting as opposed to economic profits, as I believe is the case with defeasance, certain security swaps and putable bond arrangements, resources may be dissipated. The focus on short-run accounting profitability may be at the expense of longer run economic profits. Capital resources may be misallocated in less than optimal plant and equipment decisions. Much human talent—investment bankers, commercial bankers, other financial institution personnel, lawyers, and accountants—could be used in more fruitful endeavors. In fact, the dislocation costs of physical and human capital are likely to exceed the out-of-pocket costs.

Should we be apprehensive about what probably at worst is an excess? I believe that we should be concerned, and that the cost to society, although not large, is still significant. If true financial innovation is to play its creative role in the development of our financial markets, the promotion of certain schemes is disfunctional. One might ask why if markets are rational will not such plans be exposed for what they are and wither or, in the case of a true financial innovation, high initial promoter fees diminish more rapidly? In an idealized and completely rational expectations world, excesses of the sort described would not occur. However, I believe that irrationality prevails at times and this is the ground in which less than fully productive and/or barren seeds are planted. At the time of the planting, many believe the seeds will bear bountiful fruit and consequently, are willing to pay handsomely for them. After all, they are planted in a field where many a true financial innovation thrives.

Clearly, it is difficult to distinguish the good seed from one that ultimately proves to be less than fully productive or, in the extreme, barren. Still the simple question of whether a proposal will make the markets more efficient or complete usually will reveal whether the seed is barren. While ultimately the market will decide, I believe that excesses sometimes develop and that they extend too long before being corrected by market forces. It is wishful thinking to expect promoters to be self-policing in the things proposed and in the fees extracted. After all, it is the profit motive that gives rise to financial innovation. Also, I would disdain the Securities and Exchange Commission policing such activities, as many worthwhile financial innovations would be choked off in regulatory bureaucracy. FASB surveillance of the corporate accounting implications of a new financial idea is similarly ineffective. No, the ultimate discipline must come from the

market, but hopefully an increasingly better informed and suspicious market—a market able to respond rationally and effectively to the cascade of financial ideas thrust upon it.

VII. Observations on the Future of Financial Innovation

What about the future? I believe financial innovation will continue to flourish, as financial markets and the financial services industry become even more competitive. The essential ingredient—change—is all about us. Changes in regulations, tax laws, and technology continue to unfold at almost a frightening clip. Inflation is more stable now than it has been in recent years, but we know this can change rather quickly. Interest rates, both nominal and real, behave in ways difficult to explain by past experience. International events continue to create uncertainty. In this atmosphere, financial innovation should thrive. However, the thrust of financial institutions will shift, as more marketable, depersonalized, rate-sensitive instruments are offered. Further shakeouts and consolidations of financial institutions are inevitable. The failing business doctrine has allowed large financial institutions to acquire organizations nationwide, thereby circumventing laws designed to preclude national deposit institutions. Recent regulatory changes have opened up the insurance industry to competition from other financial institutions. However, concern with the financial stability of banks, thrifts, insurance companies, and security firms has led to recent cries for reregulation.

The increasing sophistication of financial service delivery systems is making efficiency and breadth of services important. These characteristics sometimes can be achieved by merger or by linking together with other financial institutions to provide nationwide or even international service. Such joint ventures are particularly evident in the electronic funds transfer, credit card, and mutual fund areas. The differences between depository institutions, investment banks, insurance companies, telecommunication companies, mutual funds, and retailers are diminishing; the areas of business overlap are expanding. Geographic and product differentiation, once the hallmarks of the financial services industry, are becoming increasingly difficult to sustain.¹³ Whether reregulation occurs and reduces this trend remains to be seen.

On balance, there is every reason to believe that the rapid and far reaching financial innovations of the last six years will continue. The times are ripe for such occurrences. Different innovations to be sure. For one thing, deregulation already is well along the road to completion. The initial, rather sweeping, changes will be followed by refinements, or perhaps even by reversals if reregulation occurs. In the unfolding process of financial innovation, I imagine that we will continue to observe excesses of the sort described. However, these may not be as large as in the past. The marketplace for new ideas should become wiser, what with increased experience with financial innovation. Hopefully, it will become sharper in its ability to discriminate. Hefty and sustained promotion fees,

¹³ For a further discussion of the future as it pertains to the financial services industry, see Gart [6].

misallocation of resources, and the bad image finance conveys to some in our society as a result of promotion abuses are things we could better do without. Still the ultimate discipline and correction must come from the market.

While the times are ripe for financial innovation, they also are receptive for financial research. Formal tools of analysis can be brought to bear to give us more insight, both theoretically and empirically, into the rapidly changing financial environment in which we live. It is exciting, at the same time sobering, to realize that macro finance considerations are unavoidable in a field largely dominated heretofore with micro considerations.

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