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The Natural Instability of Financial Markets

by

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ABSTRACT

This paper contrasts the economic incentives implicit in the Keynes-Minsky approach to inherent financial market instability with the incentives behind the traditional equilibrium approach leading to market stability to provide a framework for analyzing the stability induced by the recent changes in bank regulation to modernize financial services and the evolution of financial engineering innovations in the U.S. financial system. It suggests that the changes that have occurred in the profit incentives for bank holding companies have modified the provision of liquidity to the financial system by banks, and the way credit assessment has moved from banks to other actors in the system. It takes the current experience in financial instability created by the expansion, through securitization, of the mortgage market as an example of these changes.

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WHAT IS FINANCIAL INSTABILITY?

It is usually believed that economics is the study of market exchange—this is the "catalactic" view associated with Mill. This is the approach behind supply and demand, the two sides of an economic transaction. Economists explain how individuals reach their decisions concerning supply and demand by reference to a behavioral ideal—rational economic man. This has led to the "efficient markets" hypothesis, which implies that any and all information that is required for rational economic decisions is contained in prices determined in competitive markets. However, this approach has one important drawback. As Ronald Coase (1991) has pointed out, it provides no explanation of markets themselves. This is confirmed by the fact that financial institutions that comprise the markets exist because they reject the efficient market hypothesis. Every offering memorandum for an investment fund contains the affirmation that the fund will achieve above-market returns because of its ability to exploit market imperfections.

There is an alternative approach that views economic exchange as time transactions—what, in finance terminology, are called "spot-forward swaps." This approach argues that there is no such thing as an instantaneous, simultaneous exchange that exerts no influence after it occurs. Time transactions involve a commitment to do something today against the promise of a commitment in the future. This is true of both real and financial transactions. When you buy a consumption good, you pay today on the expectation of a certain kind and quality of services that can be received from the good after purchase (and into an extended future for durable goods).[2] An entrepreneur who engages in production buys inputs of labor, materials, and capital today on the expectation that he will receive sufficient sale proceeds in the future to meet his cost and achieve a target expected profitability. All financial transactions are an exchange of money today based on the expectation of the receipt of money at future dates. All these transactions are similar since they involve decisions made today on the basis of expectations of the conditions that will prevail in future. Only if expectations are correct forecasts of future conditions will the future transactions be realized. This is the assumption of Rational

[2] And environmental economists would also note that they also produce waste and pollution that also must be

Expectations.

However, in real markets it is only natural that expectations should be disappointed and future commitments should not be honored. This approach has its roots in the works of Knight, Fisher, Schumpeter, and, most importantly, Keynes. It is the essence of Keynesian economics that it is the expectation of uncertain future events that determine present decisions to enter into economic activity. From this point of view, the most important question is not whether prices contain all available information, but how to prevent the natural transaction failures caused by unforeseen future events from creating chronic instability.

Traditionally there are two approaches that have been proposed. The first is what Lionel Robbins called the "Classical Theory of Economic Policy"—referring to the Classical economists such as Smith and Ricardo. He argued that they believed that the government should provide the appropriate regulatory framework to ensure that market economic transactions produced acceptable results. According to Robbins (1952), "the pursuit of self-interest unrestrained by suitable institutions, carries no guarantee of anything except chaos." To prevent the chaos that could prevail in a self-interested response to disappointment required regulatory buffers—suitable institutions—that curbed undesirable behaviors and limited undesirable results.

The second is an extension of the Efficient Markets paradigm that notes the necessity of complete markets for all future dates and events to allow hedging the uncertainty surrounding future commitments through forward transactions. This is the position that appears to have been behind the decisions of the Federal Reserve to refrain from extending regulations to increasingly sophisticated financial product engineering in financial markets. Here an increase in the breadth, depth, and completeness of financial markets should allow the risks of noncompletion of transactions to be spread to those in the system most able to bear them and prevent the transformation of disappointment into instability.

However, there is a third approach to the question of financial instability—that given by Hyman Minsky's (1982, 1986) Financial Instability Hypothesis. Minsky followed Keynes in arguing that the results of financial transactions in a sophisticated capitalist economy are

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considered.

inherently uncertain. However, he went further and argued that there was an endogenous process, much like increasing entropy in nature, in which periods of successful completion of financial commitments led to an increasing uncertainty of completion. It was the nature of economic stability to create the seeds of its own destruction by leading individuals to engage in financial transactions increasingly less likely of completion. This can be called an increase in "financial fragility." Thus, even if the financial system were stable, it would produce increasing fragility in which it was ever more susceptible to a major economic disruption. From this point of view neither regulation nor complete and perfect markets could ensure financial stability—indeed, they could be a cause of instability.[3]

The fact that Minsky developed this financial instability hypothesis during the "golden years" of the operation of New Deal banking regulation suggests that he believed that "financial fragility" was not only possible, but also present during those years of economic stability. This also implies that in Minsky's view, the New Deal legislation did little to eliminate the potential for financial fragility. As no substantial breakdown occurred in the period, we might conjecture that while financial fragility is independent of financial regulation, regulation may play a role in the rate of propagation of fragility or in preventing the transformation of fragility into major instability such as occurred during the Great Depression.

Minsky's (cf. the Introduction to Minsky, 1982) suggestion that the transformation of financial fragility into a more generalized "breakdown" into financial instability has been prevented by the existence of a "Big Government" that acts as "spender of last resort" to support business and household balance sheets and a "Big Bank" that acts as "lender of last resort" to support financial institutions' balance sheets. Since there is little current possibility of creating a global government to provide anticylical fiscal policy or a global central bank to act as lender of last resort, it seems clear that this method of damping instability is not available at the global level.

[3] It is important to note that Minsky's approach was not one of either "rational" bubbles or of speculative mania. Instead he argued that it was the nature of periods of realized expectations to induce individuals to adjust their own defenses against the possibility of noncompletion of time transactions. See Kregel (1997, pp. 543–8).

FINANCIAL INSTABILITY AND FINANCIAL FRAGILITY

The traditional conception of instability in financial markets stems from the view that financial institutions act as agents that intermediate between savers willing to lend funds and final borrowers seeking to invest funds. This intermediation function not only requires a matching of borrowers and lenders, but also, more importantly, concerns the transformation of the maturity of financial assets from short term to long term, with the implicit assumption that lenders prefer short-term, liquid assets, and borrowers prefer long-term, more or less permanent, fixed-interest liabilities. The greater the mismatch between the maturity of the short-term assets issued to savers and the long-term liabilities purchased from investors, the greater the risk that an increase in short-term interest rates relative to long-term rates will produce negative net worth and insolvency, or a flight of funds called disintermediation as the short-term bid rates lag behind the market. When the volatility of short-term interest rates is modest, the adjustment can be made by cutting back on new lending, reducing net margins, and drawing down secondary reserves; this was the method of monetary control in the postwar period. When the movement in short-term rates is substantial, loans must be called and forced sales of assets may take place, leading to downward pressure on asset prices.

In addition to maturity transformation, financial intermediaries are also characterized as producing liquidity through the issue of short-term liabilities against long-term assets. In this process the bank makes an illiquid asset held in the private sector more liquid, while the bank becomes less liquid. The willingness of bankers to create liquidity by lending against a private-sector asset (or against the expected income from a private-sector asset) depends on the "liquidity preference" of the bank. The price it charges for this liquidity creation is given by the liquidity premium. As George Soros (1987) has recognized, the willingness of a bank to finance an investment project has a direct impact on its viability and thus, on its returns, and therefore, on its price.[4]

[4] This is really an old idea that was made into an entire theory by Ralph Hawtrey (1923) when he noted that changes in interest rates affected the stock of commodities held for speculative purposes, so that tighter credit conditions (he did not use liquidity preference) would lead to lower commodity prices. It was for Keynes to make the general

Maturity intermediation and liquidity creation are usually linked together. This is the case for banks, which lend against real assets by creating demand deposits. On the other hand, in the world envisaged by the efficient markets hypothesis with complete specification of transactions for all future events, the two aspects are separated, for long-term capital assets are just as liquid as any other financial assets. In such a world, maturity transformation does not create additional liquidity because it is always possible to trade in any amount for any date and future event.

In Minsky's approach, financial fragility represents something more than either the mere possibility, or even the persistence, of maturity mismatching in financial institutions. Rather, fragility is inherent in the successful operation of the capitalistic economic system and results from changes in the liquidity preferences of bankers and businessmen as represented by changes in the margins of safety required on liquidity creation produced by maturity transformation. Thus, fragility could result even in a perfectly stable financial system as defined under the traditional terminology because of changes in the extent of the creation of liquidity for a given degree of mismatching. In this case, a fall in liquidity preference could take place, but the maturity mismatching would remain constant as bankers become willing to lend against more risky assets.

Fragility in Stable Conditions

Minsky's theory takes the U.S. financial system as its reference structure—in particular, it is crucially dependant on the negotiations and relationships between bankers and businessmen, and their evaluation of future returns and prospects. It presumes a very particular type of banker, the banker of let's say the 1960s, before the breakdown of the Bretton Woods system, and still subject to the full force of the Glass-Steagall restrictions on commercial banking. For the businessman, finance is thus a two-stage affair. Short-term project finance comes from the bank, and long-term takeout finance comes from floating the completed project in the capital market or from the profits earned from the operation of the project. This is where the rest of the financial system comes in.

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relation between liquidity provision and asset prices.

In the former case, investment bankers underwrite the floatation of the project by a primary distribution of securities in the capital market. There is no legal restriction to prevent investment banks from being direct investors, but they usually only act as brokers between firms and final investors. There is thus an implicit financial structure in which firms' short-term financial liabilities are held in bank portfolios and firms' long-term liabilities are held in household portfolios, along with banks' short-term demand deposit liabilities.

The ability of the banks to lend to business to finance investment depends on long-term capital markets to provide the funds to repay the firms' short-term borrowing. The purchasers of the long-term securities issued by firms to finance the capital stock holdings of the economy are predominantly households. The financial system thus intermediates between firms and households in a two-stage process.

This is rather different from the textbook description, which often presents the financial system as the intermediary that makes the requirements of firms for long-term lending to fund fixed-capital investment compatible with the desire of households to hold short-term liquid assets. In fact, commercial banks provide sight and other short-term deposits against secured short-term commercial and industrial lending. Investment banks convert short-term borrowing into long-term borrowing by underwriting long-term primary securities distributions. But since they do not normally take position themselves, there is no "natural" long-term demand for these securities unless it comes from other banks, firms (as is the case in many systems outside the United States), or from institutions such as insurance companies or pension funds receiving nondiscretionary savings that they invest on behalf of the general public.

To the extent that households provide the demand for the long-term securities (despite their preference for liquid assets), they do so only because the secondary market for equities provides sufficient liquidity to allow them to sell without an impact on market price. It is thus the liquidity provided by the financial institutions operating the secondary market, not the intermediary function of financial institutions, that provides the maturity transformation by which the public' demand for relatively short-term liquid assets is matched to the firms' requirement for permanent sources of finance: "So long as it is open to the individual to employ his wealth in hoarding or lending money, the alternative of purchasing actual capital assets

cannot be rendered sufficiently attractive (especially to the man who does not manage the capital assets and knows very little about them), except by organizing markets wherein these assets can be easily realized for money" (Keynes 1936, pp.160–1).

Thus, the mismatching of maturities that is supposed to be a source of instability does not appear on the balance sheet of any financial institution; the maturity transformations that occur within the financial system, and the associated position risks, are instead transferred to the investing public. In this view, liquidity is not created via balance sheet transformation of maturities, but by brokers matching buy and sell orders in the market with the help of "assigned dealers" (specialists), such as those operating on the stock exchanges, by hedge funds operating leveraged portfolios, and private equity firms.

There are thus two different methods of liquidity creation. One is "internal" to a financial institution, and results from maturity transformation by banks acting as "dealers" willing to buy and sell loans and deposits at bid-ask differentials. The other is "external" to the financial institutions and occurs in free markets in which brokers seek to match households' requests for liquidity, taking a fee or commission from buyer, seller, or both. The extreme case of "external" liquidity is the mythical Walrasian auction market, which costlessly matches buyers and sellers for all future states and dates. This is the case of the perfect efficient complete competitive market.

Financial Systems and Financial Fragility

The U.S. system is often contrasted with European financial systems by noting that the U.S. system is "market based" as opposed to "bank based." This is usually meant to convey the fact that long-term financing takes place through primary distribution of securities in the capital market, rather than through banks. The U.S. system is thus said to be becoming more "disintermediated" or more "market based" as the commercial banks' basic clients for commercial and industrial lending in the corporate sector have increased their use of the commercial paper markets to raise short-term finance, thus eliminating the banks from the first stage of the two-stage process of financing investment suggested above. At the same time, money market mutual funds, buying commercial paper as assets and paying market short-term

rates, displaced the bank's retail deposit market.

However, this would be to miss the point of the U.S. system, by ignoring the fact that in the U.S. system it is the liquidity of the secondary securities market that makes maturity transformation via the banking system unnecessary because it allows households to hold long-term securities directly. This reduces the amount of potential maturity mismatching and, thus, risk on the balance sheets of financial institutions. It seems much more revealing to say that the U.S. system differs from the European system in that in the former, more interest rate and position risks are incurred directly by the investing public, while in Europe they are carried directly on the balance sheets of banks. The same is true of European secondary markets, which tend to be dominated by banks or by dealers rather than brokers. Dealers will also tend to carry interest rate and price risk of their positions of their balance sheets.

In the U.S. financial system before the 1920s, corporate borrowing in the capital market was not extensive. Most corporations were still held by inside groups of owner-managers who implicitly provided the long-term funds for investment through retained earnings or increasing their own equity positions rather than through either bank lending or through the market. Chandler (1990) suggests that it was only in the post-WWI crisis and the 1930s depression, when retained earnings proved to be insufficient, that large manufacturing firms depended on either banks or capital markets for anything but working capital, foreign exchange, and securities transfer services. Thus, long-term borrowing and long-term lending was directly linked, outside of the financial system and independently of financial markets, but within the class of owners of industry (often with the help of the intermediation of investment banker "brokers," such as J.P. Morgan, who operated in a way that resembles today's private equity firms). This historical period corresponds very closely to Kalecki's vision of capitalism—the capitalist entrepreneurs finance their own expenditures on consumption and new investment from their own profits, without requiring any intermediation from the financial system (cf. Kregel 1989).

It was the growth of firms to large size that brought change in this structure. On the one hand, firms expanded beyond the abilities of their owners to manage them, but they also outlived their owners. Marshallian heirs, unwilling to continue in their grandfathers' footsteps, became politicians and artists and sought to convert their holdings to shorter, more liquid assets by

selling their interests to the general public. Antitrust legislation also had an important impact in producing a shareholding public by forcing the breakup of large trusts and causing their shares to be distributed in the hands of many holders. It is difficult to argue that instability in this system was the result of maturity mismatches and position risks due to the fact that banks were unrestricted in the types of assets which they could hold in their investment portfolios.

If instability does not come from banks lending long and borrowing short, where does it come from? In a system such as the one that prevailed before WWI, in which capital assets are closely held by the capitalist class, a reduction in the rate of economic expansion and the subsequent fall in prices brings instant ruin to both financial and industrial capitalists as their net worth collapses. This decline in their income and wealth brings investment and employment to a halt. In contrast, a wide dispersion of ownership of capital assets in the hands of the general public, with professional managers making decisions on behalf of the industrial firms, means that a fall off in the rate of expansion and a fall in asset prices would be more widely diffused throughout the population and not have as direct an impact on those in charge of the employment and output decisions. But, even in such a system, it is still the case that long-term assets are held directly by the public without the intermediation of the banking system so that maturity mismatching cannot be the basic cause of breakdown.

THE LINKAGE BETWEEN FINANCIAL FRAGILITY AND ECONOMIC INSTABILITY

The simplest answer that may be given is by reference to the historical record of the 1920s, which suggests that it is the deterioration of the “quality” of the assets held by financial institutions. Part of the problem of quality, especially in the latter part of the 1920s, was linked simply to fraud and misrepresentation. A more important part was linked to excessively rapid expansion of bank resources in the 1920s due to international factors.

Anderson (1979) reports massive gold inflows to the United States in the early 1920s to which were added three massive purchases of government securities by the Federal Reserve in 1922, 1924, and finally in 1927 to support the UK return to gold. While bank credit expanded by

$11.5 billion between 1922 and mid-1927, commercial and industrial loans were declining after 1924. Between 1921 and 1927 the total of outstanding commercial loans and installment credits by member banks declined slightly. The expansion in credit, which was not needed to finance industrial needs, went instead into financing real-estate lending, which increased by over $2 billion in the period, and for loans against securities and direct investments in securities, which increased by about $4 billion over the period. There was also a substantial increase in consumer installment lending. All this sounds very similar. It happened in the last half of the 1980s, and it is happening again.

This shift in the composition of bank assets meant that the assets eligible for discount ("real bills" according to the then prevailing doctrine) at the Fed were substantially reduced. Recall that the Fed had been set up for the purpose of making the currency flexible and this was to be achieved by discounting against "real bills" used to make business lending. More importantly, it meant that when the loans to real estate and financial market investors got into difficulty, these assets could not be used for discount at the Federal Reserve; as it was then set up, there was no lender of last resort safety net for this type of lending activity. This is why the most important of the two Glass-Steagall bills that were passed in the period was that of February 27, 1932. This bill extended the range of assets eligible for discount to include government securities, opening the way to open-market policy (Kregel 1992).

As readers of Frederick Lewis Allen's *Only Yesterday* (Chapter XI) will recall, the 1920s got off to a roaring start with the Florida real estate boom, followed by a crash that initiated the string of bank failures that were further exacerbated by the stock market crash and culminated in the string of bank holidays in February and March of 1933. In a 1931 study of Florida state banks' balance sheets for the period 1922–28, Dolbeare and Barnd (1931) found that the major difference between the balance sheets of failed and successful banks was:

> "the larger and more rapid increase of the resources of the failed banks [that] created problems of wisely investing the added funds.... It was necessary to reach a conclusion as to how long these funds would be left in the bank, and then it had to be decided in what type of assets the funds should be invested. ... If the return of these funds should be demanded unexpectedly at a later date, and the funds had not been invested properly so they could be recalled at once, the banks would be in serious difficulties. ... The rapidity of the inflow of new funds, ... made it necessary for the failed banks to decide their policy quickly, and probably led to a hasty analysis of the new loans and securities in which the funds were invested. ... it is not strange that mistakes were made, since there is nothing to show that the officers of the failed banks possessed superior wisdom. ... The large and rapid reduction of their resources in the post-boom periods was the immediate cause of the failed banks closing their doors." Dolbeare and Barnd (1931)

The study shows that the ratio of loans and discounts to deposits for the failed banks increased from 76% to 81% between 1922 and 1927, while it fell from 71% to 61% for the successful banks. Of the loans and discounts, the failed banks increased their lending on real estate more than threefold during the period, while the successful banks increased such lending by less than 50%. As a percentage of resources, real estate lending grew from 14% to 17% for the failed banks, while it fell from 16% to 12% for the successful banks.

Even more interesting is the finding that the ratio of equity to liabilities for the failed banks was higher than that for the successful banks in the entire period (except for the year 1925), "In other words, the owners of the failed banks were furnishing a larger proportion of the funds for which the banks were liable than were the owners of the successful banks" (Dolbeare and Barnd 1931). Investors were clearly attracted to the more speculative, faster growing banks, although presumably at that time there were no economic consultants to justify their behavior.

The study does not give data on the stock price of the failed banks, but it can be assumed that their rapid growth produced better than average increases in prices so that these banks were able to increase their capital by new issues at costs that were lower than the prudent banks. Thus, a boom in bank stocks creates cheap funding that is used to finance a boom in real estate. This would be identical to the situation that George Soros identifies as the "reflexivity" that existed in the Real Estate Investment Trusts in the 1970s (Soros 1987, pp. 66). In such cases, neither public scrutiny of bank balance sheets, nor higher capital ratios would have prevented the propagation of the crisis.

As Allen (1931) reports, most of the purchases were financed on a 10% down basis against blueprints of development sites, without legal documentation or inspection, and in the expectation of being sold at higher prices before any additional balance was due. As long as prices continued to rise, everyone could continue to meet payments; as soon as the rate of price increase moderated and stabilized, the bottom fell out of the market, leaving the banks that had financed the purchases holding collateral that was often in the form of a pyramid of successive file binders without documentation for plots mapped onto the Florida swamp.

But, this was only a practice run for the stock market boom of 1927 that got underway just as the Florida real estate boom was collapsing. The mechanism was more or less the same, with margin money replacing the 10% down payment and financial assets (many also often representing little more than blueprints) replacing plots of land.

In general, it was the rapid increase in bank resources that led to increased laxity in lending criteria as banks competed with each other to find borrowers, producing a decline in asset quality that emerged as soon as there was a fall in the growth rate of resources. This comes very close to Minsky's definition of financial fragility. It is the fall in the rate of expansion of lending that produces the fall in prices and the ensuing debt deflation. It is the change in liquidity preferences of the banks that eventually leads them to stop liquidity creation, rather than the maturity mismatch, which causes fragility.

ELIMINATING FRAGILITY BY REGULATORY REFORM

From this historical background it would appear that there are two ways in which reform to prevent fragility from producing instability could have been approached. One would have been to try to eliminate the acceleration and deceleration of bank reserves and the creation of liquidity, which means stabilizing the expansion of bank reserves. This is the path that was eventually advocated by monetarist economists who wanted to place the Federal Reserve on a monetary expansion rule. It is also considered impossible by most who recognize the endogenous nature of the money supply and the importance of financial innovations; liquidity cannot be controlled. This is also at the basis of Minsky's belief that fragility is inherent or

endogenously produced by the successful operation of the system.

This leaves only the possibility of changing the transmission process by which the excessive growth of liquid resources could produce asset quality deterioration by preventing banks from lending against real estate, financial securities, and other noncommercial assets and by preventing fraud in the creation and trading of investment assets. This is the path that was chosen in the New Deal Banking and Securities legislation. By segmenting commercial from financial or investment banking, the ability of the commercial banks to seek new areas of lending outside the traditional C&I loan was restricted. Lending to real estate was segregated in its own protected Home Loan Bank system, and investment underwriting was reserved to non-deposit-takers. In this way the system also had imposed on it a type of de facto maturity matching, with institutions segmented by the maturity and risk of the assets in which they dealt.

The securities legislation was meant to prevent fraudulent representation by placing controls on both issuers and purchasers, and by regulating the secondary markets in which they were traded. Although legislation could not give bankers “superior wisdom,” it could prevent their excessive optimism from finding an outlet in excessively risky, illiquid assets and limit the damage that would be caused. Thus, the structure of the system would not prevent fragility, but it should be regulated so as to be able to control the transmission of fragility into instability and crisis. The introduction of New Deal legislation eliminating fraud and the increasing dispersion of share ownership were both factors that damped the propagation of financial distress in the postwar period. The more or less steady expansion that occurred was enough to insure the absence of severe crisis.

It is also true that the New Deal legislation introduced strict market segmentation among financial institutions dealing with different types of asset class and, thus, brought about a de facto reduction of potential maturity mismatching in portfolios. In particular, it forbid banks from borrowing short and lending against long-term assets; but, this is perhaps the least important part of the stability of the period, for severe mismatching did not exist in the prewar period.

THE RECENT EVOLUTION OF THE FINANCIAL SYSTEM: MORE OR LESS "FRAGILE"?

Starting in the mid-1980s, there has been a gradual erosion of the limits of the regulatory segmentation imposed on the financial system under the 1933 Glass-Steagall legislation. This process has been called "deregulation." It was primarily the result of a decline in bank income that many thought would threaten the existence of commercial banks.[5] U.S. commercial banks' share of the financial assets held by all financial institutions had fallen dramatically from around 50% in the 1950s to around 25% in the 1990s as banks suffered competition for both their deposit business (from thrifts and nonregulated money market accounts) and their commercial and industrial loan business (from commercial paper).

Since existing regulations gave little possibility of entering new lines of business, flexibility had to be sought within existing regulations. Section 20 of the Glass-Steagall Act had restricted commercial banks from potentially profitable capital market activities such as the sale and management of trust and investment funds. While they were permitted transactions in certain securities, such as Treasuries, they were prohibited from affiliating with firms "engaged principally" in underwriting and dealing in securities, like corporate bonds and equity. The intention was to prevent banks from recreating the securities affiliates that had been one of the engines of the 1920s stock market boom and were subject to widespread fraud and manipulation. However, in a series of rulings in the 1980s, the phrase "engaged principally" was reinterpreted to allow banks to form affiliates to engage in these activities if the earnings they generated did not surpass specified limits. Thus, it was deemed acceptable for a bank holding company to form a subsidiary that conducted permissible activities that were sufficiently large to be considered its principal activity, leaving it free to engage in some lesser proportion of otherwise prohibited activities in which it was considered not to be "principally" engaged. The Federal Reserve first authorized such a subsidiary in 1987 under what was called the "Section 20 exemption" that

[5] See, for example, George G. Kaufman and Larry R. Mote (1994), or the even more extreme book by Lowell Bryan (1991).

allowed these subsidiaries to generate up to five percent of net earnings (eventually increased to 10% and in 1997 to 25%). Commercial banks eventually came to operate 51 securities subsidiaries, including some well-known securities firms such as Citigroup's acquisition of Solomon Smith Barney, a merged investment bank and brokerage house. The first securitized investment vehicle (SIV, of which more below) was created (it is reputed by employees Citibank London) in 1988 under this regulation.

This deterioration in segmentation has also worked in the opposite direction with securities firms and insurance companies linking up with certain types of depository institutions know as "nonbank banks," such as international Edge banks, industrial loan banks, credit card banks, and to link with deposit units through the acquisition of a single thrift, known as a "unitary thrift." For example, American Express acquired an industrial loan bank with about $12 billion in assets. As banks sought new avenues of revenue aside from the disappearing business of borrowing retail deposits and lending to commercial firms, they thus moved more and more into securities. This led to an emphasis on proprietary trading (embarked upon by Bankers Trust) and into increasing their fee and commission incomes. In particular, as the savings and loan industry was imploding in the 1980s, banks increasingly expanded their construction lending, producing the collapse in real estate of the end of the 1980s and the Greenspan strategy of leading against the wind, which basically means keeping short rates sufficiently low so that banks could rebuild their capital by riding the yield curve between short rates and medium-term rates on government securities.

Thus, the banking system that emerged from the 1980s real-estate crisis was one that no longer serviced business lending (pace the real bills doctrine) and was no longer primarily dependent on net interest margins for its income, but on the ability of their proprietary trading desks to generate profits and Section 20 affiliates to produce fee and commission income. There was less and less to distinguish a commercial bank from an investment bank other than that the former continued to offer government insured deposit, while the latter offered uninsured money market mutual fund accounts.

Largely as a result of this gradual erosion of the segmentation between the activities undertaken by commercial deposit and loan banks and investment banks operating in capital

markets, in 1999 Congress approved the Gramm-Leach-Bliley Bank Reform Act that allowed commercial banks to expand the range of their capital market activities and investment banks to expand their "commercial" banking activities. The new legislation repealed key provisions of the Glass-Steagall Act to permit a modified form of German universal banking, amending the Bank Holding Company Act of 1956 to permit the holding company owners of commercial banks to engage in any type of financial activity. At the same time it allowed banks to own subsidiaries engaged in a broad range of financial activities not permitted to banks themselves. As a result, banks of all sizes gained the ability to engage in a much wider range of financial activities and to provide a full range of products and services without regulatory restraint.

However, this change in legislation and change in the structure of the financial system did little to halt the decline in the share of assets intermediated by banks proper. It simply allowed them to operate these activities in other affiliated units of the Bank Holding Companies or to the subsidiaries of banks. Ben Bernanke, the Chairman of the Board of Governors of the Federal Reserve, has indicated in a recent speech on the impact of banks on economic activity that "nonbank lenders have become increasingly important in many credit markets, and relatively few borrowers are restricted to banks as sources of credit. Of course, nonbank lenders do not have access to insured deposits. However, they can fund loans by borrowing on capital markets or by selling loans to securitizers." He notes, however, that "banks do continue to play a central role in credit markets; in particular, because of the burgeoning market for loan sales, banks originate considerably more loans than they keep on their books" (Bernanke 2007).

This shift from a "segmented" commercial banking system to a universal banking system has done little to halt the share of financial assets that are held on the balance sheets of the banking system. However, banks have succeeded in improving their incomes by shifting from reliance on net interest margins to proprietary trading income, fees, and commissions. In short, banks no longer are the direct source of financing for business or households. Instead they have become "arrangers" or "originators." They create financial assets that they then sell to a subsidiary that in turn sells them in the capital market to nonbank financial institutions, such as pension funds, insurance companies, or to the general public. And, as in the 1920s, hardly any of these assets represent financing for business—the majority is consumption (credit cards or

automobile lending) or real estate (mortgage or home equity).

This shift has been supported by two factors in addition to the changed regulatory structure—improved computational power and the formal introduction of minimum ratios of capital to risk-weighted assets. The impact of computational power can be seen in the creation of money market mutual funds whose net asset, and thus, redemption value, is set at $1.00 to make them the formal equivalent of a liquid bank demand deposit. Without computers this could not be accomplished since it requires complicated balancing of portfolios to ensure that redemption of shares always produces a $1 net asset value. The role of computation in the pricing of derivatives such as options is also important, as is the ability to perform sophisticated statistical testing to create statistical arbitrage and relative value trading strategies. Accompanied by the introduction of scoring models to assess credit quality, this meant that the role of the loan officer was no longer the direct assessment of the risk of the project, the credit risk of a borrower, or the value of loan collateral, but rather entering standard borrower characteristics into a computer, often without ever meeting the client.

As noted above, as the Basle Accord was being completed in the late 1980s, U.S. banks were already increasing their use of off balance sheet financial affiliates. The initial impetus was to extend into capital market activities and increase fees and incomes associated with traditional lending. An off-shore or domestic off balance sheet affiliated entity would not only produce operating fees and commissions from its administration by the bank, it would also provide management fees and additional capital for the bank's proprietary traders. The introduction of the Basle Accord simply reinforced this income-driven change in bank lending activities off balance sheet. The business of banking changed from being one of holding assets to generate income from interest rate spreads to one of moving assets—the traditional activity of brokers and investment banks. But, in the process, the role of banks as specialized evaluators of credit and providers of liquidity to the system has been lost. And herein lies much of the explanation for the current round of instability.

As the dot-com boom of the 1990s collapsed amid the revelation of off balance sheet structured entities at many of the large communications and trading companies, banks looked for other sources of assets to be traded and managed, as the collapse of the high-technology stock

boom led households to seek alternatives to equity investments. Real estate provided an answer for investors, mortgages and consumer credit provided the answer for the banks. Thus, as banks sought to maximize the through put of loans that would create fee, commission, and management income, households increased their indebtedness, financing an expansion in household expenditures that pulled the U.S. rapidly out of recession and provided the engine for global expansion (as well as the historic rise in the U.S. trade deficit).

The major tool that has been employed in moving assets off balance sheet is asset securitization. This is a technique that has been in use at least since the introduction of Brady bonds and played a large part in the provision of mortgage finance after the collapse of the savings and loan industry in the late 1980s. It involves the creation of an independent special purpose entity—like an investment trust—that issues liabilities, usually fixed interest, whose proceeds are used to acquire fixed income assets. The interest received from the assets creates the income from the trust that is paid or passed through to the investors in the liabilities. The creation and management of the trust by the banks generate set up, servicing, and management fees. The assets acquired by the trust are those that the bank has originated, again for fees, that it does not want to keep on balance sheet. The liabilities issued by the trust are thus debt obligations collateralized by the assets purchased from the bank. The collateral may be grouped together in various combinations to generate particular desired characteristics in their income stream—activity that also creates servicing and management fees. The returns from the assets are also structured, with the “senior” tranche receiving more than its fair share of the income. It will thus be able to meet its commitments to pay a particular rate of return, even if some of the assets held in the trust are impaired. Because of the extent of its “overcollateralization,” the senior tranche is given an investment-grade rating by a nationally recognized statistical rating organization, insuring a demand from pension funds, insurance companies, and trusts. The remaining assets produce income that is paid to one or more “residual” tranche, and will only receive income if there is no default and expectations are realized. These will not receive investment grade and would be sold to investors, such as hedge funds, seeking higher returns from riskier assets. In this way, a pool of noninvestment-grade assets can provide the basis for the issue of investment-grade securities by the trust.

As the success of these structured assets began to produce more high risk residual tranches, it became difficult to find buyers. This problem was solved by creating another set of collateralized debt obligations whose assets were the residual tranches from existing structures. Again, a "senior" tranche was created through overcollateralization, given an investment-grade rating, and residual trances could reemerge as investment-grade paper. In some, to ensure sufficient overcollateralization, the structure would be complemented with an implicit loan guarantee by the originating bank, or a credit default swap written by the organizing bank, an insurance company, or through insurance from a "monoline" insurer that guaranteed the returns to the "senior" tranche. Here the assessment of credit risk of the collateralized obligation was not initially on the credit risks of the assets in the structure, but of the structure itself bearing sufficient over collateralization to compensate for the credit risk of the underlying assets.

Now, there are two aspects of this process that produced fragility when applied to mortgages. The granting of credit risk as investment grade by a credit rating agency was initially meant to represent the degree of liquidity of an asset,[6] not its probability of default or the size of loss in the case of default. Mortgages in general, and collateralized mortgage obligations in particular, were by nature less liquid than corporate securities that had been the major category of asset rated by the agencies. Nonetheless, credit rating agencies generally applied the same principles that they had used in evaluating corporate fixed-income securities—an area in which there is a sufficiently long run of data to have reasonable statistical evidence of performance. For the liabilities of the special purpose entities dealing with mortgages or collateralized obligations composed of mortgages, this was not the case. Thus, as the market continued to expand throughout the beginning of the new millennium, a period of stability in the Minskyian sense prevailed, and the ability of these collateralized structures to meet their expected commitments to senior and residual tranche investors led to increased confidence and a reduction in the implicit cushions of safety against noncompletion in the form of falling levels of overcollateralization. And not only did the degree of overcollateralization fall, as the demand for traditional mortgages

[6] "It is notable that in coming up with the NRSRO system, the SEC held that it was appropriate to apply lower haircuts to securities 'that were rated investment grade by a credit rating agency of national repute, because those securities typically were more liquid and less volatile in price than securities that were not so highly rated'" See

started to be decline, banks and independent loan originators sought new clients by offering more attractive terms and reducing qualification standards for "nonconforming" mortgages, that is, mortgages that did not conform to the conditions for placement with the government-sponsored mortgage guarantee enterprises such as Fannie and Ginnie Mae, Freddy Mac, and so forth.

For these "subprime" and Alt-A mortgages, the statistical record upon which to base overcollateralization ratios to ensure investment-grade rating status was even sparser and often nonexistent. Nonetheless, obligations composed of subprime mortgages with no payment history as collateral were created with senior tranches that were rated as investment grade, representing an additional reduction in the cushions of safety behind the structures.

Finally, most of these collateralized obligations were themselves purchased by special purpose investment entities that issued structured assets, or by pension funds and insurance companies so that there was very little market trading in the securities to create a basis for market valuation. Thus, their value was usually created by means of a statistical model that either had no historical basis for its parameters, or on the basis of existing structures that did not have similar performance characteristics. Thus, the undervaluation of risk and the declining cushions of safety were joined by an overvaluation of potential returns and valuations.

Nonetheless, the intended result—a large and growing source of income for banks (and for the rating agencies)—also produced a largely ignored and unnoticed increase in financial fragility. But, as long as house prices continued to rise, and new households were found to continue to demand new or refinanced mortgages, the increasingly fragile and uncertain payments commitments continued to be met. As long as new mortgages continued to fuel the demand for houses, the higher prices for houses continued to validate the overvaluation of the senior tranche assets and produce excess returns for the residual tranches. Thus, the success in the completion of payments commitments came more and more to resemble a Ponzi scheme that required increasing mortgage originations to produce the payments on the existing structures, with the addition of increasingly risky mortgage terms and quality, and continually declining

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Whitehead and Mathis (2007, p. 3).

cushions of safety.

As noted, the credit rating agencies were crucial in the credit arbitrage that was at the basis of the success of structured securitization. The agencies also experienced a Minsky-style decline in credit standards that reinforced the declining cushion of over capitalization. Since the rating agencies were usually directly consulted in the design of the securitization, they were primarily responsible for determining the appropriate overcapitalization or equity cushion that was considered to be investment grade. An issuer of a structured product would always contact a number of rating agencies to find the agency that would grant investment grade with the lowest and least costly credit enhancement. Thus, a more conservative assessment of the risks by a rating agency would never become effective because it would not be chosen. And, as time went on without difficulties in the market, the more conservative risk assessments would be revised to conform to the less conservative assessments that were being used by successful originators, in part to insure business, and in part because the history of stability at these assessment levels seemed to confirm the less conservative risk estimates as correct. This, along with the lack of statistical history on which to model the default characteristics of the assets, also contributed to the decline of the equity cushion required of the structures (Adelson 2007, p. 11).

There were other players that joined this parade—independent mortgage originators who only wrote mortgages that they then sold on a wholesale basis to banks who placed them in pools for collateralization. Others set up finance companies that used loans from banks to fund nonconforming mortgages that they originated, repaying the bank loans with the proceeds from the securitization of the mortgages. All of these institutions depended on being able to sell on short-term financed mortgages through collateralized structures to banks or directly to capital markets.

Finally, as mentioned already, in the late 1980s banks had created structured investment vehicles to move assets off their balance sheets and increase their noninterest income. In these structures, the special entity purchases structured assets or mortgages and finances them through the issue of short-term (asset backed) commercial paper and longer-term equity notes. This is a rather different structure than the collateralized obligations that generate income through the creation of investment-grade assets out of noninvestment-grade assets, primarily through credit

ratings arbitrage. Here, the income comes from the interest spread between the short-term paper issued to fund the acquisition of the long-term structured assets or the old net interest margin of pre-deregulation banking. This spread income was then increased by leverage created from overselling the commercial paper. At the peak, SIVs had issued around $400 billion of the total asset-backed commercial paper outstanding of $1.2 trillion.

The SIV is based on the same principle as a bank that funds loans with short-term liabilities, levered up by a deposit multiplier and, thus, has the traditional form of maturity mismatch. But, there are important differences from the point of view of financial fragility. Banks create deposits that are the formal equivalent of U.S. government debt by making loans—an SIV cannot automatically place commercial paper by investing in structured assets. Thus, the combination of maturity mismatching and liquidity creation common to banks is absent.

Second, banks hold reserves with the central bank and in the form of secondary reserve assets to meet a potential deposit drain—the SIV has no formal support structure in the case of a commercial paper "drain." Finally, a bank can always go to the central bank as lender of last resort to discount its loans, while an SIV can only sell its assets in the case of distress. The liquidity and stability of the SIVs thus depended on bank liquidity—that is, the sale or substitution of the commercial paper with bank loans. Although banks have argued that they are formally not committed to back up the commercial paper issued by the SIVs that they have created, manage, and administer, they nonetheless have a de facto responsibility to do just that if they are to avoid insolvency. Since there were no formal credit lines, and were to off balance sheet entities called "variable interest entities," they were not formally reported on consolidated financial statements, nor was capital required against them under the Basle Accords.[8] Thus, an SIV resembles a small bank—but without bank regulation or supervision. In addition, despite statements to the contrary, the bank creating the SIV retains its exposure to the assets in the SIV that serve as collateral to the commercial paper. When the commercial paper is not renewed, the banks must step in and either buy the new issue of commercial paper or make loans of an equivalent amount. These will count against the bank's capital ratio and the bank may find it

[8] And, if my reading of Basle II paragraph 580 is correct, the same will be true under the new approach.

impossible to meet its commitment. It is important to note that while the majority of assets in SIVs are mortgage assets, they also include other structured product, as well as credit card receivables, auto loans, student loans, and so forth, all of which will are subject to the same increasing fragility as the mortgage backed assets.

It is interesting to note that this model of funding long-term mortgage assets with short-term commercial paper was not restricted to the U.S. Similar examples caused the insolvency of two banks in Germany, as well as a real bank run for Northern Rock in the United Kingdom. Indeed, estimates of global bank risk exposure in asset-backed commercial paper is as high as $900 billion. The impact of the uncertainty over the value of the assets behind the paper and the uncertainty over the size of the implicit bank funding commitment led to a dramatic decline in outstanding commercial paper and a sharp upward spike in short-term interest rates in both the U.S. and Europe, producing an acute liquidity crisis.

Thus, by 2006 the U.S. system was one that could be described in Minskyian terms as highly fragile, with low cushions of safety and one that had impaired liquidity provision due to the increased use of security affiliates. It could only avoid a breakdown into instability as long as house prices continued to rise, as long as the flow of new mortgage applications continued, as long as interest rates continued to fall, and as long as none of the structured assets were actually sold in a market to give their mark to market value.

It is not clear what set off the collapse. As in most financial crises, in all probability it was in some area of the financial system that had nothing to do with mortgages. On the other hand, some of the subprime mortgages had been sold on an adjustable rate basis, and as reset dates approached in an environment of rising interest rates many borrowers were unable to meet their mortgage service. Already in 2006 the rise in house prices appeared to have reached a peak. As default rates rose—beyond the untested assumptions of the models that had been used to create the collateralized debt obligations—foreclosures increased, and house prices started to decline. In addition, as already mentioned, the SIVs were interest-spread vehicles with profitability determined by the positive difference between long and short rates. However, in this period the rise in U.S. interest rates was accompanied by an inversion of the yield curve in which short rates rose without a comparable adjustment in long rates, thus squeezing the interest spread

and profitability of the SIVs. As their profitability declined, the value of their assets was also falling due to the increasing rate of default and falling house prices due to foreclosures. This led to a decision by investors not to roll over the commercial paper financing if the SIVs, creating the need for banks to step in to provide loans to avoid full liquidation of portfolios.

Thus, the stage is set for a typical Minsky debt deflation in which position has to be sold to make position—that is, the underlying assets have to be sold in order to repay investors. This will take place in illiquid markets, which means that price declines and, thus, the negative impact on present value will be even more rapid. In this environment, declining short-term interest rates can have little impact, and it is understandable that the Secretary of the Treasury—a former head of Goldman Sachs who was present at the creation of many of these structures—has proposed a Super Special Purpose Entity to hold these assets, thus avoiding the need for them to be sold to make position. Unfortunately, the government has not proposed financing the entity, but has asked banks to do so. Given their current capital ratios, they will be unable to do so without reducing these ratios to levels that impair their credit ratings.

Finally, the new entity would only solve the problem of the banks and their holdings of "senior" tranches (which, as noted above, says nothing about their credit worthiness), it does nothing to solve the problem of the hedge funds holding the residual or toxic tranches that may now be without value. When these losses are reported to investors in sharply lower net asset values, they are certain to lead to massive redemptions by their institutional and pension fund clients. Since hedge funds are normally highly leveraged, this will put pressure on their lenders and their prime brokers—exactly the same banks that currently have to increase their lending in support of their SIVs and their holdings of senior tranches of collateralized obligations. They could choose to make margin calls on the declining value of the hedge fund assets pledged as collateral, but this would simply aggravate their existing problems.

As already noted, the damage from a debt deflation will be widespread—borrowers who lose their homes, hedge funds that fail, pensions that are reduced—so the net overall impact will be across a number of different sectors. However, in difference to what Alan Greenspan argued in defense of financial engineering to produce more complete markets—that it provided for a better distribution of risk across those who are willing to bear it—the risk appears to be highly

concentrated in core money center banks who, at present, are increasingly unable to bear it. The Feds survey of lending conditions currently suggests that banks are curtailing lending and tightening credit conditions. This suggest that lending to households, whose spending in the current recovery has been financed by structured finance, is likely to decline dramatically. If the availability of household finance collapses, it is also likely that the long predicted, but never realized, retrenchment of consumer spending may become a reality, buttressed by the continued decline in the dollar, producing rising import prices. That, along with rising petroleum prices, will further reduce real incomes and make meeting mortgage debt service that much more difficult. The system thus seems poised for a Minsky-Fisher style debt deflation that further interest rate reductions will be powerless to stop.

The Fed has already stated that it will accept asset-backed commercial paper as collateral for discount window lending and granted Section 23A exemptions to two large U.S. banks, allowing them to increase their lending to affiliates over existing limits. These measures, along with the Super Fund proposal, are all meant to avoid a “market” solution to the problem in the form of debt deflation. Given that the crisis appears to be similar to that which led to the breakdown of the financial system through debt deflation in the 1930s, a similar remedy in the form of a Reconstruction Finance Corporation and reregulation of the system would seem to be the most efficient means to prevent, in Hy Minsky’s words, “IT” from happening again.

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