Subprime Mortgages, Credit Default Swaps and the Making of an Economic Crisis

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October 2008

Mr. Henry Paulson, U.S. Secretary of the Treasury appealed to the American people and Congress on September 19, 2008 for help in addressing the unfolding financial crisis, explaining its antecedents as follows:

> The underlying weakness in our financial system today is the illiquid mortgage assets that have lost value as the housing correction has proceeded. These illiquid assets are choking off the flow of credit that is so vitally important to our economy. When the financial system works as it should, money and capital flow to and from households and businesses to pay for home loans, school loans and investments that create jobs. As illiquid mortgage assets block the system, the clogging of our financial markets has the potential to have significant effects on our financial system and our economy.

Those effects started unraveling soon after on a global scale. Between October 10, 2007 and October 9, 2008, the DOW and NASDAQ lost 34.5 percent and the S&P 500 lost 37.4 percent. That means, an investment of $1000 in an index fund priced against the DOW or NASDAQ on October 10, 2007 was valued at $650.50 a year later. Other indexes around the world suffered similar, if not worse, fates. Tokyo's Nikkei-225 and London FTSE-100, for example, fell by about 47 and 41 percent respectively over the same period.

Stock markets are the traditional barometers of the economy. When they are rising—bull market—the economy is deemed to be doing well and when they are falling—bear market—the economy is considered to be in trouble. When investors panic about bear markets, it can cause the markets to fall faster or increase volatility. Hence, it is extremely important to ensure investor confidence to avoid capital crunch for businesses, and in so doing, avoid economic slowdown, layoffs and even recession which can export Wall Street's troubles to Main Street's.

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The forces leading to the recent volatility in the stock markets have been at play for a few years, yet many people were oblivious of them until the big failures on Wall Street and the plunging markets brought everybody's attention to the economy. This awareness has led to two questions: First, what really caused the problem? And second, when will it end? The purpose for this paper is to answer the first question as simply and completely as possible. I trace the cause of the problem to the interactions of three forces: the emergence of unrealistic expectations about prosperity; flawed but well-intentioned government policies; and irrational confidence of financial industry players in their own brilliance. My hope is that by providing a clear, complete and at once simple explanation of what happened, we will develop insights into how long we can expect the problem to persist.

Unrealistic Expectations about Prosperity

Citizens, businesses and governments have been living beyond their means for decades in this country. The national debt has been increasing steadily at about 7.9 percent per year between 1980 and 2008, growing from about $909 billion to $10 trillion, according to the Bureau of Economic Analysis. In contrast, gross domestic product (GDP) grew about 5.7 percent annually over the same period. The White House Budget Office projects the federal government's share of the national debt to reach $4.22 trillion by the end of 2008, up from about $197 billion in 1980. That is equivalent to 11.6 percent per annum growth rate over the period. This rapid growth in the federal government's share of the national debt underscores the ongoing discussions about the sustainability of Social Security, Medicare and other entitlement programs.

Bureau of Public Debt (http://www.publicdebt.treas.gov/) data show that the share of the national debt held by foreigners has been increasing, engendering conversations about its potential effects on the nation's economic security. At the end of August 2008, total debt held

by foreigners amounted to about $2.74 trillion, accounting for about 27.4 percent of national debt held by the public. Of this, Japan and China held 21 percent and 20 percent, respectively.

Bureau of Census data show that state and local government debt also increased, rising from $1.28 trillion in 1997-98 to $2.2 trillion in 2005-06. According to ThomsonReuters, total municipal borrowing more than doubled between 2000 and 2007, from $195 billion to $425 billion. This debt, raised typically through bond issues, is usually used for public construction projects—such as building and/or repairing roads and highways, parks, emergency service equipment, bridges, schools, as well as water and sewerage systems.

Consumer debt has also been increasing rapidly since the 1980s. Data from the Federal Reserve (www.federalreserve.gov) show that in January of 1980, total consumer debt in the U.S. amounted to about $350.5 billion and had ballooned to over $2.54 trillion by August 2008. Between these periods, consumer debt grew at an average annual rate of about 7.32 percent, a little slower than the growth rate of the national debt. Contrarily, consumer savings have been decreasing rapidly over the same period such that by the end of 2007, it was only 0.4 percent of personal disposable income, or 40 cents for every $100 of disposable income. This contrasts with a savings rate of 11.2 percent 25 years earlier in 1982.

Increasing debt at all decision levels in the country may be attributed to the availability of cheap credit driven by the low interest policy of the Federal Reserve, and unrealistic expectations about prosperity. The *American Dream* seems to have been replaced by an entitlement mentality and not something earned. Low interest rates and evaporating savings put earnings pressure on local financial institutions, leading to the development of innovative debt instruments that fed consumers' desire to feel prosperous even if it meant doing it with other people's money. Consider, for example, the strategy credit card companies used to aggressively expand their

businesses by offering consumers deferred payments on outstanding balances while encouraging them to transfer existing balances from other creditors using enticing interest rate options. Consumers took advantage of these offers to increase their credit worthiness, setting them up to qualify for higher credit offerings. Additionally, companies like GE offered cheap credit to their customers to finance purchases of their products.

The consumption-driven economic growth that resulted from the cheap credit and unrealistic prosperity expectation was, for all intents and purposes, unsustainable. This is because wealth comes from investments and investments come from savings. With savings close to zero, the nation was not really creating any new wealth but consuming its accumulated wealth, including home equity, and building debt. This addictive consumption is reflected in a continuing growth in imports even as the value of the dollar declined, resulting in an increasing trade deficit. For example, quarterly trade deficit averaged about $84.6 billion between the first quarters of 1991 and 2001 and increased to an average of about $202 billion between the second quarters of 2007 and 2008, an increase of about 138 percent in a decade.

Bureau of Economic Analysis data show that U.S. net international investment—defined as the total investments by U.S. entities in foreign entities less total investments by foreigners in U.S. entities—declined from a surplus of $365.5 billion in 1980 to a deficit of $2.5 trillion in 2007. Thus, U.S. governments and private businesses imported foreign investments to address the lack of savings in the country.

Well-Intentioned but Flawed Social Policy

Home ownership is accepted and supported by public policy as an indication of social progress in the U.S. The expectation is that people would buy a house when they are young, pay off their mortgage during their working life and live off their pension and social security in

retirement. To support the realization of this expectation, the federal government established two government sponsored enterprises (GSEs)—Fannie Mae and Freddie Mac—and charged them with purchasing mortgages from primary lenders to ensure liquidity in the primary mortgage market. To fund their operations, Freddie Max and Fannie Mae pooled the mortgages they purchased and packaged them for sale as mortgage-backed securities to investors on the open market. As of September 2008, the two GSEs held or guaranteed about half of the $12 trillion U.S. mortgage market.

The Emergence of the Subprime Market

Securing good customers involves cost to the lending institution: due diligence, documentation and assignment of the correct credit rating to determine the level of debt that a customer can adequately manage. But the arrangement that the GSEs would automatically purchase conforming mortgages from the lenders creates conditions for moral hazard. This moral hazard is realized when lenders did not incur the necessary costs to secure good customers because they could sell off the loans to the GSEs without incurring any penalty. The policy goals established for the GSEs as well as prevailing lending rules in the early 2000s supported the entrenchment of opportunism and moral hazard in the home mortgage market.

The U.S. Department of Urban Development (HUD), the mission regulator of Freddie and Fannie, established the following operational goals for the 2001-2003 period: at least 50 percent of homes financed by Freddie and Fannie should be for families with incomes no greater than the median incomes in their communities; at least 20 percent should be for families with very low incomes; and at least 31 percent should be in underserved areas. These rule changes created an environment where the GSEs relied on lending institutions to help them achieve their goals and the lending institutions seized the opportunity to expand their use of subprime lending

tools to enhance their own profitability. Home sales increased rapidly between 2000 and 2006. The growth is illustrated by almost 1.3 million new single-family houses being sold in 2005, compared with an average of 609,000 per year during 1990–1995.

The availability of subprime loans was particularly useful for consumers deemed ineligible for credit in the prime credit market. Critics of subprime lending identify two laws—Depository Institutions Deregulation and Monetary Control Act (DIDMCA) (1980) and Alternative Mortgage Transaction Parity Act (AMTPA) (1982)—which made it possible for lenders to originate mortgages with prices and features previously prohibited by individual states. For example, by federalizing lending, it became possible for lenders to originate loans with higher interest rates and broader range of loan terms than previously allowed under various state lending laws. AMTPA, for example, allowed lenders to originate mortgages with features such as variable interest rates, adjustable rates, balloon payments and negative amortization.[2] A 2002 study by Kenneth Temkin and his colleagues found that subprime borrowers are more likely to be low income, ethnic minorities and less financially knowledgeable and sophisticated, leading to suggestions of predatory lending practices by lending institutions.

The profit potential of subprime loan instruments attracted many speculators into the housing industry and created a sort of euphoric feeding frenzy among brokers and mortgage companies who were the primary originators of subprime loans. The mortgage supply chain all benefitted from the rapid growth and solid expectations about the industry. For example, some of the largest homebuilders in the country— D.R. Horton, Pulte, and Lennar, among others—saw

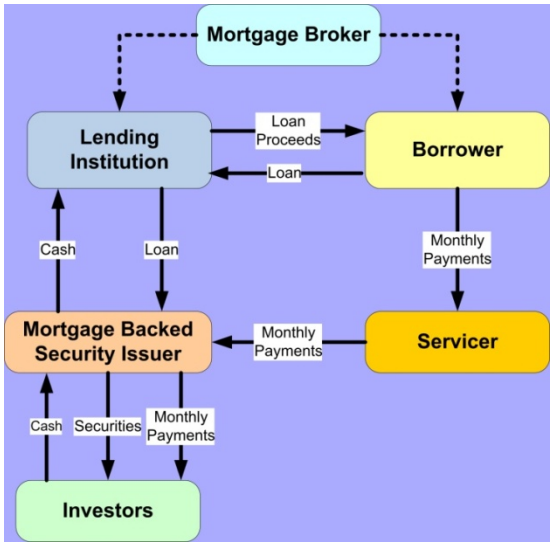
[2] Payment shock often results with interest-only (I-O) mortgages when mortgage payments double or triple after the interest-only period. Payment option ARM usually begins with very low interest rates and adjusts to the traditional rate after some time, depending on what is negotiated or offered. Negative amortization is when a borrower's payments are insufficient to cover interest and the difference is added to the principal, causing the amount owned to exceed the original loan.

their share prices and revenues increase significantly during the heydays of the subprime mortgage. The stock price of D.R. Horton, for example, went from $3 in early 1997 to all-time high of $42.82 on July 20, 2005 while Pulte's revenues grew from $2.33 billion in 1996 to $14.69 billion in 2005. Subprime mortgage borrowers also benefited because they were able to purchase their own homes. As such, it was hailed as facilitating the *American Dream*, but it will soon be reviled as creating the "American nightmare." Despite this, it is important to recognize that the growth in subprime mortgage lending was fueled by well-intentioned changes in legislation coupled with lax and irresponsible due diligence supported by aggressive marketing by lenders and sustained by an insatiable and unrealistic expectation of prosperity for *all*, symbolized in the right to home ownership.

Mortgage-Backed Securities

The subprime mortgage market could only grow if liquidity was high in the primary mortgage markets. Mortgage-backed securities are fungible, negotiable instrument representing financial value that are backed by mortgages. They are necessary for ensuring liquidity in the mortgage lending market. Companies like Freddie and Fannie do this through a mortgage securitization process (**Figure 1**).

Figure 1: Mortgage Securitization Process



The mortgage securitization process begins with the mortgage broker, who helps the lending institution and the borrower to find each other and gets paid for that service in fees at the closing of the loan. The lending institution provides the loan proceeds or the money to the borrower in exchange

for the loan owed, which is sold then to a mortgage-backed security issuer, such as Freddie Mac and Fannie Mae. These GSEs only purchase loans that are conforming to their guidelines. Using the services of trustees, underwriters, rating agencies and credit enhancement providers, the issuer—Freddie, Fannie and their competitors—securitizes the mortgage by transforming it into a traded asset that is sold to investors in return for monthly payments. The cash received from investors goes to pay the lending institution—providing the necessary liquidity in the primary market. The issuer appoints a servicer (a local bank or similar) to collect monthly payments from borrowers and uses them to pay investors. The Associated Press reports that by March 2007, the mortgage-backed securities market had grown to $1.3 trillion from about $10 billion in 1997.

Mortgage-backed securities have three principal sources of risk: interest rate, credit default and prepayment. Interest rate and prepayment risks are correlated because when interest rates fall, homeowners are likely to refinance their loans at lower rates, thereby paying the loans off before the appointed time (prepayment). This reduces the income flow to the mortgage-backed security and the issuer has to make up the difference for investors. Interest rates and credit default are also related because when interest rates go up, the risk of default increases which increases the issuer's obligation risks. Lending practices in the last few years engendered the conditions for increasing issuers' risks.

Lending Practices and Default Risks

The regulatory changes facilitating subprime loans allowed for some very creative lending practices. For example, some lenders started offering interest only mortgage (I-O Mortgage) payments or payment option adjustable-rate mortgages (ARMs) in order to increase the attractiveness of mortgage loans principally in disadvantaged areas, helping the GSEs meet

their mission goals. These tactics allowed lenders to increase revenues while helping consumers fulfill their dreams even if they could ill afford them. Many of them were unaware of "payment shock" and "negative amortization" risks associated with the loans they were securing. The role of these lending tactics in the current financial crisis is significant.

By mid-2005, it had become obvious that the housing market was overheated. Home prices, which have formed the foundation of confidence in mortgage-backed securities and the expansion of subprime loans, had started shrinking across the country because of oversupply and insufficient demand. Data from the Case-Shiller home price index show that a dozen states, including the District of Columbia and Hawaii, and seven metropolitan areas out of 20, saw home price inflation in excess of 80 percent between 1998 and 2006.[3]

As home prices fell and the moratorium on interest-only mortgages and the payment option adjustable-rate mortgages ended, homeowners who had borrowed under these terms found themselves faced with mortgage payments they could not afford, leading to increasing delinquency rates, especially in the markets that experienced the most price inflation. To put this in perspective, the default rate on single-family home mortgages rose rapidly from about 1.4 percent in the first quarter of 2005, where it had hovered for most of history, to 2.2 percent in second quarter of 2007 and reached 4.1 percent a year later by the end of the second quarter of 2008. It is important to note that even at this level of delinquency rates on mortgages, 96 percent of mortgage homeowners were paying their mortgages monthly. Therefore, it is inconceivable that mortgage delinquencies would derail the financial system. What the rising delinquency rates did was confirm investors' misgivings about the underlying soundness of mortgage-backed

[3] The majority of the Midwestern states experienced less than 20 percent home price inflation during the same period while six of the 20 largest metropolitan areas tracked by S&P/Case-Shiller saw less than 10 percent price appreciation in inflation-adjusted terms during this period.

securities. But some of the issuers have had these concerns and moved to protect themselves from default risks using credit default swaps.

Credit Default Swaps

Credit default swaps (CDS) are privately negotiated, over-the-counter contracts in which a buyer (counterparty) makes a series of payments to a seller in exchange for the right to receive a payoff if a credit instrument goes into default. Because their value depends on the value of their underlying financial instruments, CDS are derivatives, and as such may be used to hedge existing exposures to credit risk or speculate on changes in credit spreads. Although credit default swaps behave like insurance, they are unlike insurance because they could be used to speculate on outcomes by third parties without any ownership positions in the underlying securities. The International Swaps and Derivatives Association (ISDA), the industry association whose stated purpose is to encourage the prudent and efficient development of the privately negotiated derivatives business, lobbied to keep CDS as privately negotiated contracts between buyers and sellers, and thus remain unregulated.

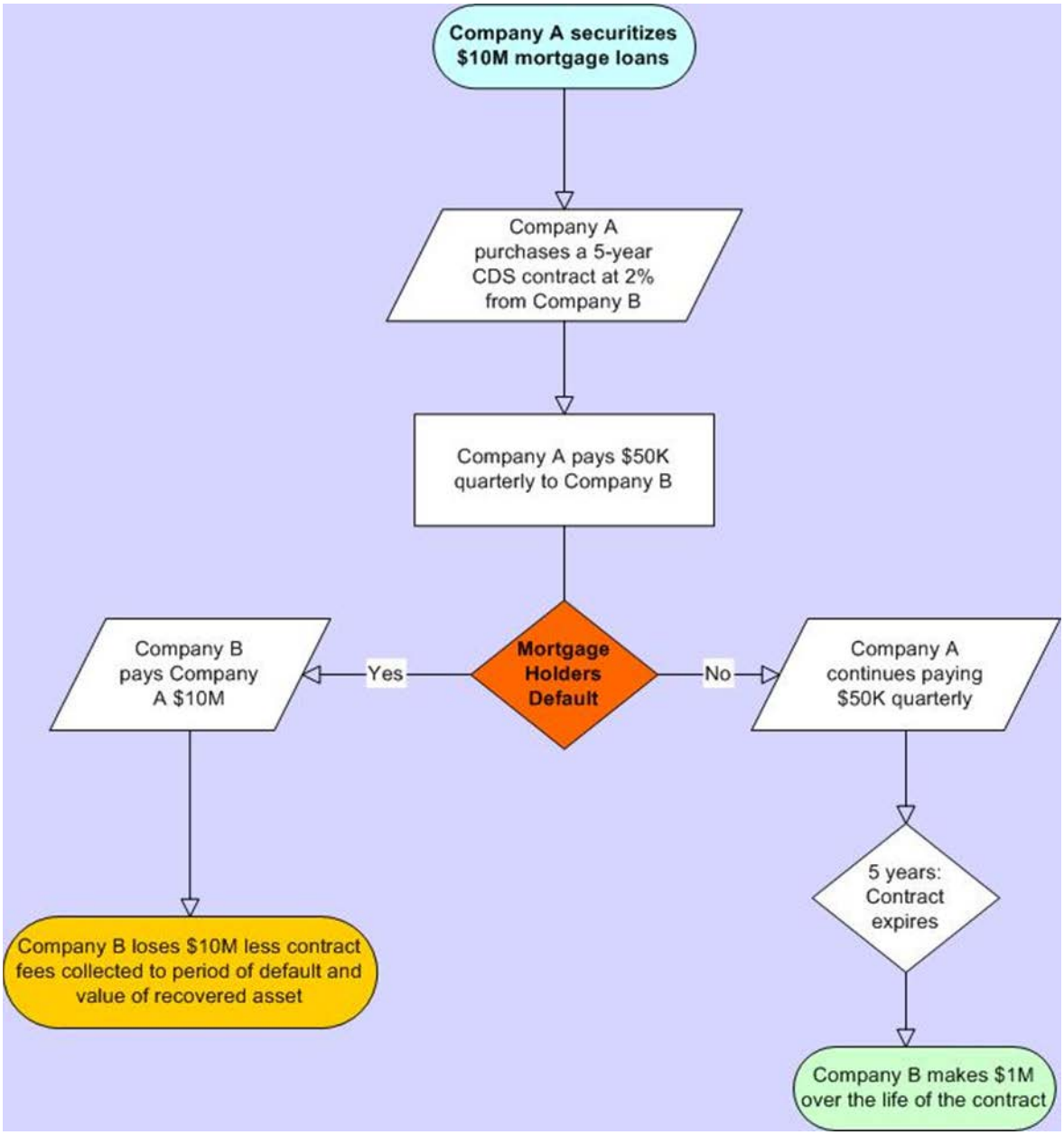
According to the British Bankers Association credit derivatives report in 2006, CDS are the most widely-traded credit derivative product. While no one really knows the volume of CDS trade, the Bank for International Settlements estimated the notional amount on outstanding CDS worldwide in June 2007 at $42.6 trillion, up from $28.9 trillion in December 2006. By the end of 2007, the ISDA estimated the worldwide CDS value at between $45 trillion and $62.2 trillion and by mid-year 2008, its estimate of the notional CDS amount outstanding CDS was $54.6 trillion, a drop of 12 percent from previous year. The U.S. share of this market, according to the U.S. Office of the Comptroller of the Currency, was $16.4 trillion at the end of March 2008, which is larger than the country's GDP in 2007.

CDS buyers do so because they believe there is a risk they do not want to bear. The sellers of CDS, contrarily, do so because they believe that they can profit from counterparty risk exposure by polling them. **Figure 2** provides a simplified overview of mortgage backed CDS operation. In the figure, we suppose that Company A perceives a default risk associated with a $10 million mortgage loan it has purchased and securitized. It purchases a CDS contract from Company B to mitigate that risk at the cost of 2 percent of the value of the securities per year for a contract life of five years. If the mortgage holders do not default, Company B makes $1 million, and Company A continues collecting mortgage payments from the mortgage holders. Contrarily, if the mortgage holders default within the contract life, then Company A receives $10 million from Company B. For the CDS selling business to work for Company B, it has to sell a mix of CDS that do not have similar likelihood of default. It can, then, use the proceeds from the others to pay for the ones that default. This is what happens in traditional insurance businesses.

Unfortunately, most CDS sellers did not follow this prudent insurance model and instead sold CDS for the same reference entity (mortgage-backed security) to numerous buyers. Suppose in our Figure 2 example, that Company B sold CDS for the same reference security to nine other buyers, its total liability increases from $10 million to $100 million in case of a default on a maximum revenue of $2 million instead of $200,000. But if no default occurs, Company B stands to make a maximum of $2 million.[4]

[4] In traditional insurance business, the insurer is required to have proof of available capital to support potential payouts. Therefore, if Company B was an insurance company, its business will be limited by its available capital to cover potential losses. But, because the CDS market is private and does not have proof of capital requirements, they were only as good as the sellers' ability to pay in case of default. This explains why most of the market makers in the CDS market were large investment banks—e.g., Lehman Brothers, Bear Stearns, Merrill Lynch, AIG, Goldman Sachs and Morgan Stanley. These companies rode on their brands' credibility and the size of their holdings to build confidence in their CDS contracts. These facilitated the ratings they received and spurred purchases of their CDS even though they did not have the financial resources to indemnify buyers in case of defaults.

Figure 2: Simplified Overview of CDS Operation



This strategy of transforming $10 million into $100 million without borrowing or putting up capital is called leveraging. Leveraging allowed many firms to participate in CDS and other derivatives markets without having to put up any collateral on the assets they were purchasing. Randall Smith and Susan Pulliam, writing in the *Wall Street Journal* on April 30, 2007, identify such traditional investors as the Pennsylvania State Employees' Retirement System and mutual-

fund companies such as Easton Vance Corp. and Federated Investors Inc. launching funds that rely heavily on derivatives.

Leveraging

Leveraging is the degree to which an investor or business is utilizing borrowed money to achieve its objectives. Highly leveraged companies risk bankruptcy if they are unable to make debt payments and may be unable to find new lenders in the future. Leverage ratio is the company's total assets divided by its net equity. Table 1 shows the leverage ratio of some of the large U.S. banks that have been involved in the unfolding financial crisis. The table shows that all the banks with leverage ratios in excess of 30X have been purchased, gone out of business or declared bankruptcy. This supports a 2000 Federal Reserve of New York's study that indicated that leverage ratios are a good predictor of bank failure. Freddie and Fannie were put into conservatorship by the Federal Housing Finance Agency on September 7, 2008 after Moody's reduced their preferred stock credit rating from A1 to Baa3, the lowest investment grade rating, on August 22, 2008. Although these GSEs had leverage ratios that were under 30X, they were at risk of failure because of their inability to sell their subprime mortgage-backed securities. They were also considered by the government to be "too big to fail."

Table 1: Sample Leverage for Selected U.S. Banks (Year-Ending 2007)

Bank	Assets	Equity	Leverage
Bank of America	$1,715B	$146.8B	11.7X
Citigroup	$2,187B	$113.6B	19.2X
JPMorgan	$1,562B	$123.2B	12.7X
Wells Fargo	$575B	$47.6B	12.0X
Bear Stearns	$395B	$11.1B	33.5X
Lehman Brothers	$691.1B	$22.5B	30.7X
Merrill Lynch	$1,020B	$31.9B	31.9X
Goldman Sachs	$1,120B	$42.8B	26.2X
Fannie Mae	$882.5B	$44.0B	20.1X
Freddie Mac	$794.4B	$26.7B	29.8X

Sources: Company financial reports (http://finance.yahoo.com).

When companies leverage themselves beyond their capability to meet their obligations, and they do this against assets that are highly correlated or against the same asset (as in the CDS market), a small default creates a catastrophic event that can wipe out the company. AIG's leverage ratio was 11X, much lower than those of the banks that failed. However, compared to its peers in the insurance market, this was very high. For example, Montpelier Reinsurance and Berkshire Hathaway's leverage was 2X while Chubb, White Mountains Insurance and Travelers were 4X. AIG's counterparties included companies such as Goldman Sachs, to whom it owed $20 billion. Its failure, therefore, threatened to bring down some of the "mightiest enterprises in the world," noted *The New York Times* of September 28, 2008. This contagion effect was important in the policy decisions made when the financial crisis started unfolding.[5]

A Perfect Storm

As the financial situation of the participants in the mortgage-backed securities markets became evident to potential investors and lenders, they became "toxic" and lenders that have previously extended them credit started bulking even as investors in mortgage-backed securities shied away, leading to declining prices for these securities. The inability of issuers to sell these securities implied inability to pay for the loans, let alone procure new ones. At the same time, moratoria on interest-only mortgages and payment option adjustable-rate mortgages were coming due and repayment delinquencies were increasing, leading to downgrading of mortgage-backed securities by the rating agencies.[6] Increasing mortgage repayment delinquencies

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5 The situation with bank leverage in Europe seems much worse than in the U.S., with Deutsche Bank spotting leverage ratio in excess of 50 percent as of its last annual financial report in 2007. With European banks (and Asian banks) participating in the mortgage-backed securities and the credit default swap markets in the United States, it is not surprising that the current financial crisis is a global one, and not just an American problem.

6 Freddie Mac announced on February 27, 2007 that it will not buy subprime adjustable-rate mortgage for which the borrower did not qualify for the maximum rate of the loan rather than just the low introductory or teaser rate.

increased cash needs by the issuers to cover payments to investors. The delinquencies also triggered payment events for CDS contracts sold on those mortgages. Unfortunately, the high leverage situations for most of these counterparties implied higher credit riskiness and consequently they had difficulty securing credit, which created a liquidity crisis in the financial markets. When issuers were unable to meet their CDS contract obligations, the rating companies downgraded their credits, exacerbating the borrowing difficulties. Their inability to pay also meant their counterparties were now faced with cash flow difficulties. Thus, once the mortgage default started, there was a domino effect that spread quickly through the financial sector and created a contagion effect for the rest of the economy and threatened a global economic recession.

The stock markets were brought into the unfolding crisis because most of the companies short on cash started selling assets—principally stock holdings—which triggered the bear market. Unfortunately, because their leverage was much higher than their assets, it was impossible for them to raise enough cash to address the problem that they had created by writing highly correlated CDS and related contracts. The result was liquidation of companies, bankruptcies and bailout packages that started with Bear Stearns in April, Countrywide Financial in June, and a whole of flurry of activities in September and October 2008 in attempts to stem an economic meltdown.

The Bailout Program

The massive stock sell-off and the uncertainty of the extent of the financial obligations emanating from falling home prices and increasing mortgage default rates provoked a credit freeze that threatened to bring Wall Street's problems to Main Street. Governments—from U.S. through Europe to Japan—believed they had to do something to prevent an impending

catastrophe. And thus, set in motion the massive injection of capital into financial institutions as well as unprecedented government interventions in private financial markets in decades. For example, the Federal Reserve Bank's Board of Governors authorized the creation of 24-month credit-liquidity facility from which AIG could draw up to $85 billion. The loan is collateralized by AIG's assets at a rate of 8.5 percentage points over the three-month London Interbank Offered Rate (LIBOR). In exchange for this credit facility, the U.S. government received warrants for a 79.9 percent equity stake in AIG and the right to suspend dividend payment to AIG common and preferred shareholders. Similarly, the Federal Housing Finance Agency's conservatorship of Freddie and Fannie caused the issuance of new senior preferred stock and warrants for common stock amounting to 79.9 percent of each of them to the U.S. Treasury. Additionally, the U.S. Department of the Treasury received legal authority to establish and manage the $700 billion Troubled Assets Relief Program (TARP) under its newly created Office of Financial Stability on October 3, 2008 from the U.S. Congress. Most of the money will go towards the purchase mortgage-backed securities, equities and loans to unfreeze credit and create an insurance program for troubled assets. The purchase of mortgage-backed securities will be structured to help homeowners under threat of foreclosure to keep their homes.

How Long to Sanity?

Daniel Gross, writing on *Slate* (www.slate.com) argues that the bailout plan is structured like a hedge fund, because like a hedge fund, it uses borrowed money to bet on outcomes that are inherently risky. Therefore, the bailout plan's success depends on the accuracy of the performance assumptions about the underlying assets being purchased and insured. The expectation is that companies benefiting from the bailout will correct their twisted balance sheets and, hopefully buy back the government's equity positions. There is some optimism about this

outcome. For example, veteran investor, Warren Buffet, is quoted by Erik Holm on Bloomberg.com (www.bloomberg.com) as saying "I think the Treasury will pay back the $700 billion and make a considerable amount of money." There are also many who believe the plan is going to leave taxpayers holding the bag for terrible business decisions of private individuals.

The success of the bailout plan also depends on what happens in the rest of the economy as it hovers on the brink of a recession.[7] For example, automobile sales are down and General Motors, Chrysler and Ford are closing plants. Should this spread and deepen, unemployment will increase and amplify the risk of mortgage defaults for homeowners with fragile financial conditions. Thus, there is a risk that mortgage delinquencies may spread to credit card delinquencies, currently hovering around their historical average of about 5.5 percent. Signs of this are already visible with American Express announcing a layoff of about 10 percent of its workforce at the end of October 2008, citing increasing default risk of some of its wealthiest customers. This follows recent 5 to 10 percent layoff announcements by companies such as Hewlett Packard, Whirlpool, Yahoo and Goldman Sachs—a mix of companies covering technology, manufacturing and finance.

Another potential player in the success of the bailout plan is the exposure of finance companies such as GE Financial and GMAC. These subsidiary companies have, in the past, made significant contribution to their parents' profits by financing products sold by their parent companies as well as participated in speculative activities such as CDS and subprime mortgage-backed securities. Because of the private nature of their transactions, no one knows the extent of their exposure and the effects expanded mortgage and credit card delinquencies may have on

[7] The economy is deemed to be in a recession when it experiences two consecutive quarters of negative GDP growth. The first negative growth occurred in the second quarter of 2008. If the third quarter second numbers come in negative, the economy will be officially in a recession.

their parent companies. For example, GE Financial contributed about $72 billion of GE's $172 billion profits in 2007 and its inability to make its numbers in 2008 second quarter caused GE to miss its estimates. A recent *Fortune Magazine* cover story "Is GE Okay?" by Geoff Colvin and Katie Benner (October 27, 2008) suggests that GE Capital Services may have exposed GE to unprecedented risks. It recently failed to sell its private-label credit card business because no one wanted to assume $30 billion of credit card receivables when much of those receivables are held by subprime mortgage borrowers having difficulty paying their mortgages, Colvin and Benner report. GE's cash problem was confirmed recently when it sold $3 billion new equity in special preferred shares to Warren Buffet at 10 percent and another $2 billion in public sales of common stock after two consecutive years of buying back shares. The hanging question is this: If this is happening at GE, who else is vulnerable?

The foregoing defines the uncertainty about the success of Secretary Paulsen's bailout plan. It also clouds our ability to know how long the current crisis will last and how deep its reach will be. It could have been hoped that the *invisible hand* that caused consumers, lenders, financial institutions and others in between to make these risky deals would have been left to deal with the results. Yet, that option eluded us when panicked policy makers and politicians adopted the "too big to fail" philosophy. The only option left is to hope that the worse is over so that the bailout plan works. Should any major failures occur in the magnitude of AIG, or worse, should many *minor failures* that add up to a gigantic failure occur, we may be faced with a deeper crisis that cannot be contained via administrative fiat.

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