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U.S. Subprime Mortgage Crisis: Policy Reactions (A)

Creditworthiness is like oxygen; you don't notice it when it is around.

—Warren Buffett[1]

In March 2008, the U.S. Federal Reserve Board (the "Fed"), in an unprecedented move, played a critical role in orchestrating JPMorgan Chase's purchase of Bear Stearns, the fifth-largest U.S. investment bank. This was no ordinary deal between two investment banks on Wall Street. The Fed had consented to cover up to $29 billion in potential losses from Bear Stearns' risky assets, which were linked to the U.S. subprime mortgage crisis. In a separate move, to ease the economy's credit crunch, the central bank also opened a direct credit line for investment banks for the first time in history. The policy broke away from the traditional practice of directly lending to commercial banks only. These moves were all aimed at restoring investors' confidence amid concerns of the widespread impact of the mortgage crisis.

Even before the Bear Stearns deal, the Fed had made several efforts to prevent the crisis from turning from bad to worse. The Fed had slashed interest rates at the fastest pace in decades, to 2.25% as of March 2008 (see **Exhibit 1**). In a parallel effort, the Bush administration approved a fiscal stimulus package exceeding $150 billion. Yet such measures failed to restore confidence; the dollar tumbled to record lows against major currencies, and many financial markets suffered from declines not seen since the September 11, 2001 terrorist attacks (see **Exhibits 2** and **3**). The International Monetary Fund (IMF) pointed to the U.S. as the "epicenter of the global slowdown" amid lower world growth forecasts[2] (see **Exhibit 4**).

Policy makers, academics, and business leaders were caught in an intense debate over what the best policy response would be moving forward. Some argued for an aggressive monetary and fiscal expansion to prevent a recession in the United States. Additional proposals ranged from the Fed and the Treasury taking on more direct responsibility for financial regulation of investment banks to the provision of aid for the millions of homeowners who faced foreclosures, unable to meet their housing payments. Many critics, however, viewed the Fed's involvement in the Bear Stearns crisis and some of the other proposals advanced to date as a bailout for financial institutions' imprudent lending

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Professor Laura Alfaro and Research Associate Renee Kim prepared this case. This case was developed from published sources. HBS cases are developed solely as the basis for class discussion. Cases are not intended to serve as endorsements, sources of primary data, or illustrations of effective or ineffective management.

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practices, which had been conducted especially in the subprime mortgage sector; and as a bailout for homeowners' irresponsible borrowings to purchase homes beyond their means.

The Housing Boom

Expanding the American dream of homeownership must continue to be our mission. . . . Let's look for every possible reason to approve applicants, not to reject them.

— Angelo Mozilo, CEO, Countrywide Financial[3]

A frenzy of multiple bids on a single house; quick sales and turnover of housing inventory; massive new home constructions. These were just some of the happenings that characterized the booming U.S. housing market in the early 2000s (see **Exhibit 5**). Low interest rates and attractive mortgage rates fueled housing starts to a 25-year high by the end of 2003.[4] House prices surged by 124% in 1997–2006, according to the S&P/Case-Shiller national home-price index.

Financial innovation[5] One sector that particularly benefited during this period was the subprime mortgage market. A subprime mortgage was a loan given to people with poor or no credit history at higher-than-normal rates. Housing for these borrowers, was quite affordable during the boom even at higher premium rates, because interest rates were so low (see **Exhibit 1**). According to the U.S. Department of Housing and Urban Development, the number of lenders, including leading financial institutions such as Merrill Lynch and Citibank, specializing in this type of loans more than tripled to 209 in 2005.

From financial institutions' point of view, the historically low interest rates, coupled with the institutions' own ample liquidity, left them in search of a new sector where they could generate higher returns. They found it in the subprime market. A popular type of subprime mortgage was a "2/28" or "3/27" loan, whereby the borrower would pay a fixed rate for the first two or three years, then pay a variable rate for the remaining years. The initial rate was usually 6% higher than the benchmark six-month London Interbank Offer Rate (LIBOR).[6] With high housing inflation, delinquencies on subprime products went down, permitting favorable rates to continue. Consequently, many subprime borrowers assumed that they could easily refinance at the existing market rates.

In addition, the advancement of sophisticated financial products played a critical role in the expansion of the subprime mortgage market. With traditional mortgage loans, banks' lending capacity had been dependent on the size of their customer deposits. Under the new model, banks sold the mortgages to the bond market, which not only made it easier to fund additional borrowing but also allowed them to make a commission on every mortgage they sold. Loans were often repackaged and sold as securities or instruments known as "collateralized debt obligations" (CDOs). Although estimates varied, one financial institution said there were about $500 to $600 billion in CDOs made of bonds backed by subprime mortgages, out of the $1.5 trillion in global collateralized CDOs.[7] What made CDOs unique was that they represented different types of debts and credit risks. Investment banks believed that they were minimizing risk by selling pooled assets rather than keeping a lump sum of a single high-risk loan on their balance sheets. This new practice allowed these products to receive "AAA" or higher credit ratings from agencies such as Moody's or Standard and Poor's.

Hedge funds, which faced less regulation or supervision compared with traditional banks, were active buyers of these new innovative mortgage-related financial products, willing to risk high

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leverage for the promise of high capital gains. European and Asian financial institutions also fueled the demand for such securities, which exposed them to subprime-related mortgage products. As one banker noted, "There was fierce competition for these loans. They were a major source of revenues and perceived profits for both the originators and investment banks."[8]

Burst of the bubble When concerns about inflation finally began to emerge in 2004, in June of that year the U.S. Federal Reserve started to hike rates and did not stop until the rate reached 5.25% in June 2006. Homeowners, especially those who took out subprime mortgages, started to feel the impact of higher rates. With homeowners facing the burden of monthly payments beyond their means, the number of defaults on such mortgages and consequent foreclosures of homes rose in early 2007 (see **Exhibit 6**). In his March testimony to the Joint Economic Committee, however, Federal Chairman Ben Bernanke assured Congress that the housing market weakness did not appear "to have spilled over to a significant extent."[9]

The following month, California-based New Century Financial, the second largest subprime lender in 2006, filed for bankruptcy after struggling with buyback demands for defaulting mortgages. Financial institutions started to tighten credit conditions. Additional subprime mortgage-related troubles hit the markets, triggering anxiety and concerns among investors about the level of their exposure to such mortgages (see **Appendix** for chronology of events). Many analysts noted the difficulty of accurately assessing potential losses because the products that made up CDOs had been sliced and re-packaged many times. In July 2007, two hedge funds run by Bear Stearns that were heavily involved in subprime mortgages, were shut down. On August 9, French bank BNP Paribas decided to suspend three funds worth two billion euros, citing difficulty in valuing the funds' assets.

As investors realized that the subprime mortgage problem had spiraled beyond borders, panic struck markets across the globe. On the same day, August 9, the European Central Bank, in what would mark the beginning of many operations, injected 95 billion euros into the market to soothe fears about the subprime credit crunch. The U.S. Federal Reserve took similar action; in fact, its $35 billion injection on August 10 was the largest since the 9/11 terrorist attacks in 2001. Despite these interventions, the crisis continued to unravel and became a global credit crunch, striking major Wall Street firms such as Citibank and Merrill Lynch, which not only wrote off billions of dollars in mortgage-related losses but also forced their CEOs to resign before the year's end (see **Exhibit 7**). On January 22, 2008, the Fed even slashed its federal funds rates by three quarters of a percentage point to 3.5% before its regular monthly meeting, the biggest cut since 1982. As a Fed governor described the situation, "In informal terms, we are uncertain about where the economy has been, where it is now, and where it is going."[10]

What Went Wrong?

The upheaval that began more than two months ago has been called not only a subprime crisis but also a banking crisis, a crisis of liquidity and a crisis of collateral. It has been each of those things, but most of all it has been a crisis of central banking.

—*The Economist*, October 2007[11]

Monetary policy Many experts blamed the crisis on the expansionary monetary policy during the early 2000s that kept interest rates low for so long despite rising asset prices. Among them was Anna Schwartz, an influential economist at the National Bureau of Economic Research, who claimed that "there never would have been a sub-prime mortgage crisis if the Fed had been alert. This is something Alan Greenspan must answer for."[12] John Taylor, an economics professor at Stanford University, argued that the housing bubble could have been avoided if the Fed had applied the

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"Taylor rule" to determine the interest levels.[13] In his view, the Fed Funds rate should have been higher than its actual rate by at least three percentage points during the early 2000s (see **Exhibit 8**). Even William Poole, president of the Federal Reserve Bank of St. Louis and a voting member of the Fed's policy panel that determined interest rates, admitted, "With the benefit of hindsight . . . it is not hard to argue that the [Fed] was too slow to raise the federal funds target after taking the target down to 1% in 2003."[14]

However, according to then-Fed Chairman Alan Greenspan, he and his colleagues at the Fed believed that "the potential threat of corrosive deflation in 2003 was real" (see **Exhibit 9**). The 1% rate set in mid-2003 was targeted to counter potential deflation after the economy tumbled into a recession after the burst of the dot-com bubble and the 9/11 terrorist attacks.[15] Greenspan also highlighted that long-term interest rates did not rise after the Fed started to raise rates in mid-2004. This puzzling situation, which Greenspan termed a "conundrum," was a deviation from past experiences when long-term interest rates had corresponded to changes in short-term interest rates.

One possible explanation for such trends was that consumers expected housing prices to continue to rise as they had until then. Another explanation was the surge in global savings led by many Asian countries following the 1997–1998 financial crisis and by oil-exporting countries after the increase in oil prices in the 2000s. Bernanke had labeled this phenomenon the "global savings glut," in which worldwide savings soared to 33% of nominal GDP in 2006 from 24% in 1999, outpacing investments, and thus holding down long-term interest rates.[16] Coupled with the worldwide trend of lower inflation, long-term rates seemed to have become less sensitive to movements in short-term rates[17] (see **Exhibit 10**).

In addition, some critics argued that the financial crisis stemmed from the central bank's failure to target asset prices. There were parallels drawn between the United States' current crisis and Japan's economic problems after the burst of its housing and stock market in the 1990s.[18] Stephen Cecchetti, professor at Brandeis University, asserted that a central bank should adjust its policy to *both* inflation and asset prices, since the inclusion of the latter could reduce the likelihood of an asset price bubble.[19] Others disagreed, including Fed Chairman Bernanke, who believed that changes in asset prices should affect monetary policy only to the extent that they affect the central bank's inflation forecast. Bernanke's theory was that as long as there was an aggressive response to inflation, there was no significant benefit to responding to asset prices.[20] Similarly, Greenspan noted that monetary policy had its limits—that "bubbles cannot be safely defused by monetary policy or other policy initiatives before the speculative fever breaks on its own."[21]

Financial supervision Poor regulation was also highlighted as one of the primary causes of the crisis, as financial institutions came under scrutiny about how they actually managed their risk and enforced loan standards. Standard & Poor's estimated that subprime writedowns could reach $285 billion, but other investment banks expected the figure to reach $400 billion.[22] Carmen Reinhart and Kenneth Rogoff, former research directors at the IMF, pointed out: "New unregulated, or lightly regulated, financial entities have come to play a much larger role in the financial system, undoubtedly enhancing stability against some kinds of shocks, but possibly increasing vulnerabilities against others."[23]

The central bank had federal supervision over traditional commercial banks, but not over investment banks, hedge funds, or other firms involved in derivatives or complex financial products such as CDOs.[24] The Securities and Exchange Commission, Bear Stearns' primary regulator, insisted that it had fulfilled its responsibilities, and that the investment bank's failure was "a lack of confidence, not a lack of capital."[25] Half of all subprime loans were written by state-chartered mortgage companies with little supervision. Rating agencies were paid by the very companies whose

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securities were being rated. Lenders sold products such as "piggyback" loans that did not require the borrower to make a downpayment. One research firm reported that borrowers who did not provide full documents that proved their income or assets surged from 17% of subprime borrowers to 44% in 2006.[26]

But as long as Wall Street was raking in fat profits from innovative financial products during the housing boom, the idea of imposing stricter regulations or control seemed unnecessary. An observer commented that even though some attempts had been made to impose regulations, they were "obstructed by the prevailing belief that the economy did best when financial markets operated as freely as possible."[27] Barney Frank, chair of the House Financial Services Committee, recalled that former Fed Chairman Alan Greenspan "specifically refused to act," while others voiced their doubts that more regulation would have been able to prevent the current crisis.[28]

Closely related to the issue of regulation was the criticism of the financial compensation system of investment banks. Raghuram Rajan, professor at the University of Chicago and former IMF chief economist, blamed the practice of compensating employees regardless of the losses banks had accumulated as contributing to the outbreak of such financial crises. Martin Wolf of the *Financial Times* noted, "By paying huge bonuses on the basis of short-term performance in a system in which negative bonuses are impossible, banks create gigantic incentives to disguise risk-taking as value-creation."[29]

Possible Solutions

Some say the world will end in fire [financial collapse]
Some say in ice [inflation]. . . .

—Robert Frost, as quoted by Harvard economist Kenneth Rogoff[30]

Monetary policy In the short run, the Fed seemed more preoccupied with weak economic growth than price stability, suggesting the possibility of further rate cuts. In February 2008, Fed Chairman Bernanke stated that ". . . it is important to recognize that downside risks to growth remain. The FOMC . . . will act in a timely manner as needed to support growth and to provide adequate insurance against downside risks."[31] Yet the central bank faced a dilemma. Lower interest rates were aimed at reviving liquidity, largely because banks were hesitant to lend amid concerns of a further credit squeeze. Loose monetary policy could also encourage the dollar, which had reached an all-time low against the euro, to remain weak, which could increase net exports and improve the U.S. current account deficit.[32] However, opponents fretted that the Fed was walking down a dangerous path by focusing on economic stimulation while overlooking rising inflation. Inflation, as measured by the Consumer Price Index, had risen 4.3% over the last 12 months as of January, coming close to a 16-year high and even sparking fear of stagflation.[33] Core inflation, which excluded food and energy prices, showed a 2.5% year-on-year increase in January, higher than the Fed's unofficial inflation target range of 1%–2%. Rising oil and commodity prices, coupled with a weak U.S. dollar, reinforced the current upward trend (see **Exhibit 11**). Low interest rates would not help the extremely low U.S. savings rate either, another key factor behind the huge U.S. deficit.

Critics argued that the Fed should rein in inflation now and stop cutting interest rates, rather than risking the chance of inflation spiraling out of control. Allen Meltzer, professor at Carnegie Mellon, argued that the 1970s experience with stagflation was that a country unwilling to accept the possibility of a small recession would end up paying the larger cost of inflation, thus questioning the Fed's willingness to cut interest rates so drastically and quickly.[34] Others claimed that the Fed was risking its commitment to price stability and anti-inflation; this credibility, if lost, could be a lengthy

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and costly process in contrast to recessions, which tended to be short. However, Bernanke refuted that the economy was heading toward stagflation and suggested that inflation could come down ". . . if slower-than-expected global growth moderates the pressure on the prices of energy and other commodities or if rates of domestic resource utilization fall more than we currently expect."[35]

In addition, the large amount of liquidity injected into the financial system over recent months raised concerns that the Fed contributed to moral hazard, the mentality that banks might escape from taking full responsibility for their actions since the central bank would bail them out. For example, Countrywide, the largest U.S. mortgage lender, received $51 billion in public funds through the Federal Home Loan Bank system. Nouriel Roubini, an economics professor at New York University, argued that this was a clear bailout of insolvent mortgage lenders who had engaged in reckless practices.[36]

Many observers questioned the extent to which government should provide assistance and be responsible for "cleaning up" the mess created by financial institutions, especially in light of the dramatic role the Fed played in helping to rescue Bear Stearns from collapsing. On March 14, the Fed and JPMorgan agreed to provide 28-day emergency loans to Bear Stearns, which was facing a severe liquidity squeeze. Two days later, JPMorgan announced that it would buy Bear Stearns for $2 per share, a 93% discount from its last closing price of $30 per share, with a promised $30 billion credit line from the Fed for JPMorgan to purchase the troubled investment bank.[1] The Fed's involvement raised questions about its appropriate role. Critics claimed that the Fed essentially bailed out Bear Stearns which created the danger of encouraging irresponsible financial practices to continue in the future. Alan Blinder, a former Fed vice chairman, insisted that "You're taking on substantial risks when you do something virtually unprecedented or you put money at risk. The Fed has now done both."[37] Former Fed Chairman Paul Volcker, although agreeing that the Fed's judgment was "understandable," argued that the unprecedented move was not "what you want for the longstanding regulatory support system."[38] Others, however, applauded the bold moves by the Fed in times of unprecedented uncertainty. Treasury Secretary Henry Paulson claimed that "We're very aware of moral hazard. But our primary concern right now . . . is the stability of our financial system, the orderliness of the markets."[39]

Fiscal policy Another proposal was to accompany monetary expansion with fiscal stimulus. Former Treasury Secretary Lawrence Summers, for example, argued that fiscal policies would be felt by families bearing the brunt of the recession, contrary to monetary policies that had a more direct impact on financial institutions. In his view, the use of fiscal policy would also "mitigate the various risks of bubble creation associated with excessively low interest rates."[40]

The Bush administration's $150 billion fiscal package included tax rebates for households and individuals and tax cuts for businesses. Most analysts agreed that a fiscal stimulus should be "timely, targeted, and temporary" to be effective.[41] Yet there were doubts as to whether the stimulus package met these requirements. First, the tax rebates were expected for early summer 2008, creating a time lag. However, a fiscal stimulus would need to be implemented more quickly in order to maximize its effectiveness. Second, as Stephen Roach, chairman of Morgan Stanley Asia, argued, "Government aid is being aimed, mistakenly, at maintaining unsustainably high rates of personal consumption"; Roach asserted that this was exactly what got the U.S. into the subprime mess in the first place in the form of low national savings and a huge trade deficit.[42] He asserted that aid should target low-income consumers or unemployed workers who would spend the money they'd received and thus boost

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[1] The deal was revised a week later with JPMorgan raising the purchase price to $10 per share amid intense opposition from Bear Stearns' shareholders and trading partners. The Fed's agreement to cover up to $30 billion in potential losses from Bear Stearns' risky assets was reduced to $29 billion, with JP Morgan agreeing to meet the other $1 billion.

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demand. A greater concern was that as households faced excessive debt, the rebates could be used to repay existing debts rather than for consumer spending. In fact, one poll found that 45% of the people planned to pay off bills and only 19% planned to spend their rebates.[43] Third, some worried that if stimulus measures such as tax cuts dragged on rather than being short-term temporary measures, they might only worsen the nation's budget deficit.

Financial regulation Many critics advanced the need for more stringent regulation standards and supervision. This applied to financial institutions' failure to fully disclose the risks of their loans and the possibility of higher interest rates that subprime mortgages borrowers would have to pay at a later date. In other words, the riskiest products were sold to borrowers who lacked proper information and tools to properly assess the loans they were taking out. And buyers of the special asset-backed securities had little idea of the quality of the different underlying assets that were pooled. Some argued that the central bank should focus more on financial institutions' liquidity management to better assess risks associated with liquidity, or even take on the responsibility of supervising investment banks. James Dimon, JPMorgan's chief executive, admitted that "We have a terribly global world and, over all, financial regulation has not kept up with that."[44] However, greater financial regulation touched on the broader debate of *laissez-faire* economics—to what extent should governments and policy makers leave the financial sector to operate according to free market principles?

Other measures Given that the crisis had originated with the burst of the housing bubble, some analysts advocated that policies should focus on fixing problems in the housing sectors rather than trying to use low interest rates to solve the problem. In March 2008, the government had temporarily the increased mortgage loan limit of federal housing agencies such as Fannie Mae and Freddie Mac to $729,750 from $417,000, with the hope that it would stimulate home purchases and mortgage refinances and thus increase actual consumer spending or investment. The fear was that the higher Fannie Mae and Freddie Mac loan limits could lead to more homeowners overextending their finances again and creating bigger additional bad loans, a burden which would ultimately fall on taxpayers.

Additional proposals involved increasing the government's role in resolving the crisis, such as allowing bankruptcy judges to alter the terms of some mortgages facing foreclosure and making it easier for borrowers to switch into more affordable loans backed by the government. Yet Treasury Secretary Paulson opposed such measures, claiming that "Most of the proposals I've seen would do more harm than good—bailing out investors, lenders or speculators who, instead of getting a free-pass, should be accountable for the risks they took.[45]

As the global credit crunch and anxieties over the subprime meltdown showed few signs of easing as of March 2008, additional policy measures seemed necessary. Volcker commented, "We've got a lot of work to do [regarding] what we do with the regulatory system, the supervisory system, what the role of the Federal Reserve is, what the role of the Treasury and the government is, because this is a different financial market.[46]

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Appendix

Timeline of Events

2007	
February 7	California-based New Century Financial Corp., the second-largest subprime lender in 2006, said it would have to restate earnings for the first three quarters of last year amid losses from higher-than-expected loan repurchases. HSBC Holdings, Europe's biggest bank, also warned that its bad debts would surge beyond $10 billion in 2006, about 20% higher than analysts' average forecast, blaming rising delinquencies in its subprime loans in the U.S. market.
March 12	Trading of New Century Financial shares were suspended amid rumors of a possible bankruptcy and after the lender said it could not meet creditors' demands to buy back defaulting mortgages. A few days earlier, the company stopped making loans because its own lenders, including Bank of America and Citigroup, cut off financing to New Century.
April 2	New Century Financial filed for bankruptcy protection. It announced that it would slash 3,200 jobs, more than half of its work force.
April 24	The National Association of Realtors said sales of existing homes tumbled 8.5% in March from February, the biggest month-to-month drop in 18 years.
June 12	RealtyTrac, which provided foreclosure listings in the United States, said foreclosure filings jumped 90% in May compared with the same period last year.
June 22	Bear Stearns announced that it would spend $3.2 billion to bail out one of its subprime hedge funds. At the same time, it tried to raise external funds from other banks to rescue another fund.
July 18	Bear Stearns said its two hedge funds with heavy exposure to the subprime market had lost over 90% of their value, equivalent to over $1.4 billion.
July 20	Fed Chairman Bernanke warned that there would be "significant losses" from subprime mortgages and that problems were likely to "get worse before they get better."[47]
July 27	Fears about the subprime mortgage crisis spread rapidly and hammered global stock markets; the Dow Jones dove 4.2% in five sessions.
July 31	Bear Stearns turned back clients trying to withdraw their money from a third hedge fund, citing that it had been overwhelmed with withdrawal requests. The bank also filed for bankruptcy protection for the two funds it unsuccessfully tried to bail out.
August 5	Warren Spector, Bear Stearns' co-president, resigned.
August 6	American Home Mortgage, another home loan provider, filed for bankruptcy, citing the slumping housing market and problems with subprime mortgages.
August 9	BNP Paribas, a French bank, suspended three investment funds worth two billion euros, citing that it could not value the assets in the fund due to problems with their subprime exposure. The European Central Bank (ECB) decided to inject 95 billion euros into the market to try and calm it down. The U.S. Federal Reserve and Bank of Japan took similar action.
August 10	The ECB provided an additional 61 billion euros in funds; London's benchmark FTSE 100 lost 3.7%, its worse trading day in more than four years.
August 13	The ECB conducted its third cash injection that month, 47.7 billion euros; the U.S. Fed and Bank of Japan took similar measures as well.
August 17	The Fed cut the Fed discount rate by half a point.
August 31	Fed Chairman Bernanke tried to reassure investors that the Fed would "act as needed" to contain the mortgage crisis from spreading even further.
September 14	Northern Rock, the biggest mortgage lender in the United Kingdom, received emergency funding from the Bank of England, as it suffered from a severe liquidity squeeze linked to the U.S. subprime mortgage problems. The news sparked a bank run for a few days, the first in the nation in over a century, which was contained only after the government said it would guarantee all deposits held at Northern Rock.
September 18	RealtyTrac revealed that home foreclosure filings in the U.S. surged 115% in August from the same period last year, the highest number of such filings since the company started to keep records of the foreclosures. The same day, the Fed cut the Fed Funds rate by half a percentage point to 4.75%, the biggest rate cut in almost five years. The Dow Jones rallied to close up 2.51% to 13,739.39.

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October 1	Former Fed Chairman Alan Greenspan warned, "As in similar situations of inventory excess, I would expect home price declines to continue until the rate of inventory liquidation reaches its peak."[48]
October 29	Merrill Lynch's CEO Stanley E. O'Neal resigned after the company suffered its biggest quarterly loss in its history due to subprime-related losses.
November 4	Citigroup announced that it would suffer an additional $8–$11 billion subprime-related writedown, on top of the $6 billion writedown announced in the previous month. CEO Charles Prince tendered his resignation.
November 29	RealtyTrac said foreclosure filings now represented one closure for every 555 households in the nation, indicating that the situation was getting worse.
December 18	The U.S. Commerce Department reported that housing construction fell 3.7% to a seasonally adjusted rate of 1.2 million units in November, marking the lowest level of home constructions in more than 16 years.
December 20	Bear Stearns posted its first quarterly loss in eight decades, including a $1.9 billion writedown on its mortgage assets. The announcement brought Wall Street's combined losses from the subprime mortgage crisis to $40 billion.
2008	
January 11	Bank of America agreed to buy Countrywide Financial Corp for $4 billion, rescuing the nation's largest mortgage lender from declaring bankruptcy. The previous day, Countrywide said its late mortgage payments and foreclosures in December 2006 reached their highest level ever recorded, causing its shares to nosedive.
January 22	The Fed slashed interest rates by three-quarters of a percentage point before its regularly scheduled meeting.
February 17	Northern Rock was nationalized, and trading of its shares was suspended after two failed attempts to sell the troubled lender.
February 28	Bernanke, at his congressional testimony, denied concerns of stagflation, saying, "I don't think we were anywhere near the situation that prevailed in the 1970s."[49]
March 6	The latest quarterly housing market survey from Mortgage Bankers Association's revealed that over 900,000 households were in the foreclosure process, up 71% from a year ago; subprime adjustable-rate mortgages accounted for 42% of the foreclosures.
March 11	The Federal Reserve announced that it would lend up to $200 billion to major investment banks and accept a wider variety of securities as collateral, including hard-to-sell mortgage-backed securities, to ease the credit squeeze. Other foreign central banks, including the European Central Bank and Bank of England, agreed to participate as well. The Dow Jones index surged 416.66 points to 12,156.81, the biggest point gain in over five years. However, enthusiasm was short-lived, and the Dow retreated the next day amid skepticism that the Fed's move was only a short-term solution.
March 13	The U.S. dollar fell below 100 yen during trading for the first time since November 1995.
March 13	Carlyle Capital Corporation, a major hedge fund, collapsed from its exposure to mortgage-backed securities. Bear Stearns' shares tumbled amid concerns of the investment bank's exposure to Carlyle as its major creditor.
March 14	Bear Stearns' CEO Alan Schwartz said its liquidity position had "significantly deteriorated" and would receive an emergency credit line from JPMorgan and the Federal Reserve.
March 16	JPMorgan agreed to buy Bear Stearns for $236 million, or $2 per share. The Fed also agreed to shoulder up to $30 billion in potential losses from Bear Stearns' troubled assets.
March 18	The Federal Reserve cut rates again (by an 8-2 vote), reducing its Fed Funds target rate by 75 basis points to 2.25%. Short-term rates were now three full points lower than September 7, signalling the fastest pace of cutting rates in decades. The Dow Jones surged 420.41 points, or 3.5%, to close at 12,392.66.
March 24	JPMorgan revised the terms of its Bear Stearns deal after bitter protest from Bear's shareholders and employees over the initial deal. The new bid valued Bear Stearns at about $1.2 billion, or $10 per share, and gave JPMorgan a 39.5% stake in the company. The Fed's agreement to take up to $30 billion of potential losses from Bear Stearns' illiquid assets, such as mortgage securities, was reduced to $29 billion, with JPMorgan agreeing to take on $1 billion.

Source: Casewriters.

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Exhibit 1a Effective Fed Funds Rate (%)

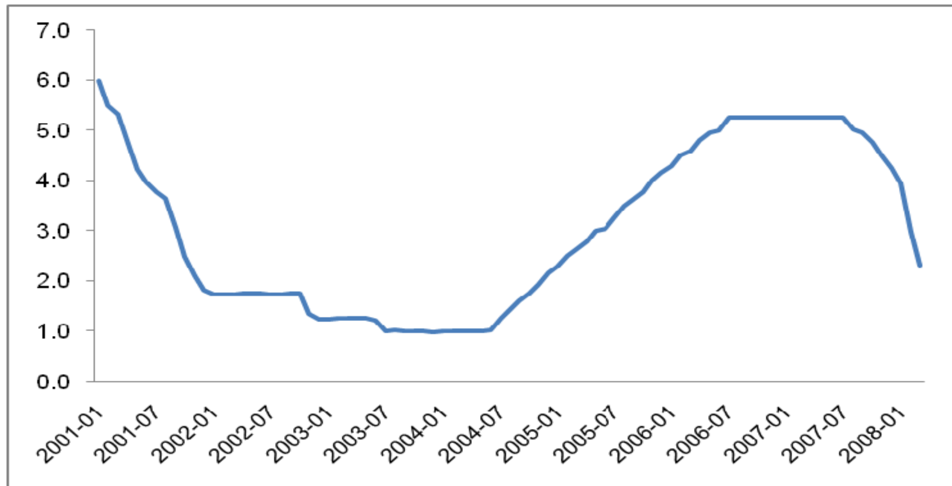

Exhibit 1b 10-Year Treasury Rate—Constant Maturity, Quoted on Investment Basis, and Inflation-Indexed (%)

Source: Created by casewriter using data from the U.S. Federal Reserve Board.

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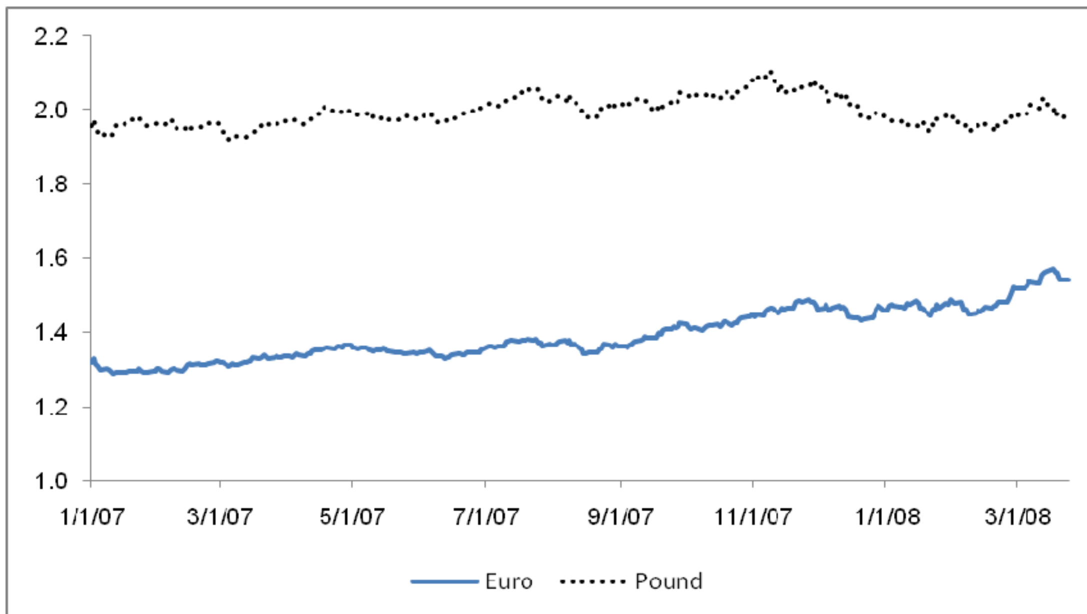
Exhibit 2a Japanese Yen/US Dollar Exchange Rate

Exhibit 2b Euro/US Dollar and British Pound/US Dollar Exchange Rate



Source: Created by casewriter using data from Global Financial Data, Inc.

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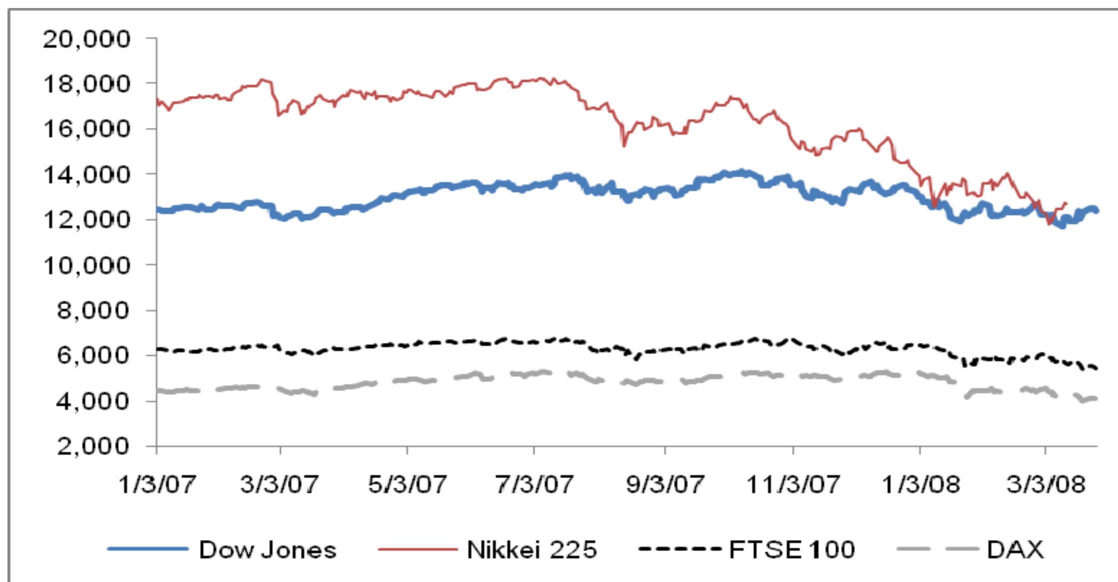
Exhibit 3 Global Financial Markets



Source: Created by casewriter using data from Global Financial Data, Inc.

Exhibit 4 IMF World Economic Outlook Global Growth Forecast (%)

			Estimates	Projections	Difference from October 2007 Projections	
	2005	2006	2007	2008	2007	2008
World Output	4.4	5.0	4.9	4.1	0.2	-0.3
Advanced Economics	2.5	3.0	2.6	1.8	0.1	-0.4
Of which:						
United States	3.1	2.9	2.2	1.5	0.3	-0.4
Euro Area (15)	1.5	2.8	2.6	1.6	0.1	-0.5
Japan	1.9	2.4	1.9	1.5	-0.1	-0.2
Other advanced economies	3.2	3.7	3.8	2.8	0.1	-0.2
Emerging market and developing economies	7.0	7.7	7.8	6.9	0.2	-0.2
Africa	5.9	5.8	6.0	7.0	-	-0.2
Central and eastern Europe	5.6	6.4	5.5	4.6	-0.3	-0.6
Commonwealth of Indep. States	6.6	8.1	8.2	7.0	0.5	-
Developing Asia	9.0	9.6	9.6	8.6	-	-0.1
Of which						
China	10.4	11.1	11.4	10.0	-0.1	-
Middle East	5.6	5.8	6.0	5.9	0.1	-0.1
Western Hemisphere	4.6	5.4	5.4	4.3	0.5	-

Source: International Monetary Fund, "World Economic Outlook Update," January 2008, http://www.imf.org/external/pubs/ft/weo/2008/update/01/index.htm, accessed March 3, 2008.

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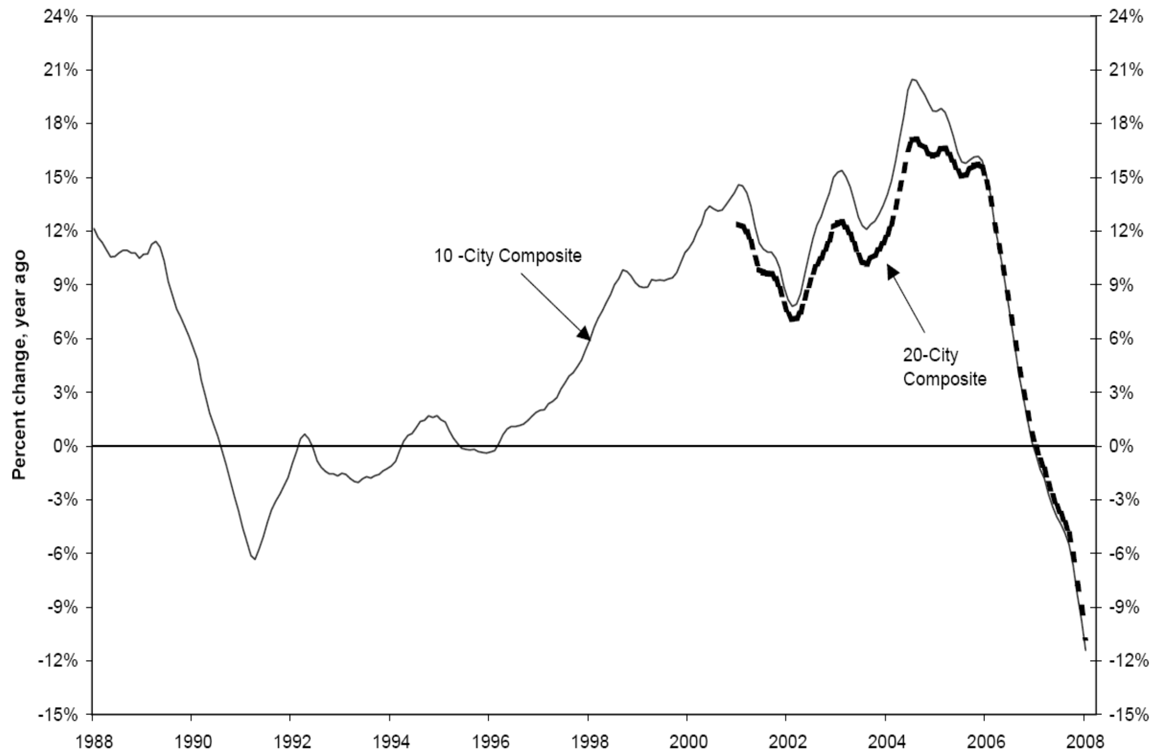
Exhibit 5 S&P/Case-Shiller Home Price Indices[a]



Source: Standard & Poor's, "Record declines in home prices continued in 2008, according to the S&P/Case-Shiller home price indices," press release, March 25, 2008, p. 1.

[a]The S&P/Case-Shiller U.S. National index tracks the value of single-family housing and covers all loans, including non-traditional loans, "jumbo" loans exceeding $417,000, and subprime loans. Geographically, it covers about 70% of the country. The 10-City Composite Index is a value-weighted average of 10 metro areas including Boston, Chicago, Denver, Las Vegas, Los Angeles, Miami, New York, San Diego, San Francisco, and Washington, D.C. The 20-City Composite index includes those in the 10-City Index plus Atlanta, Charlotte, Cleveland, Dallas, Detroit, Minneapolis, Phoenix, Portland, Seattle, and Tampa.

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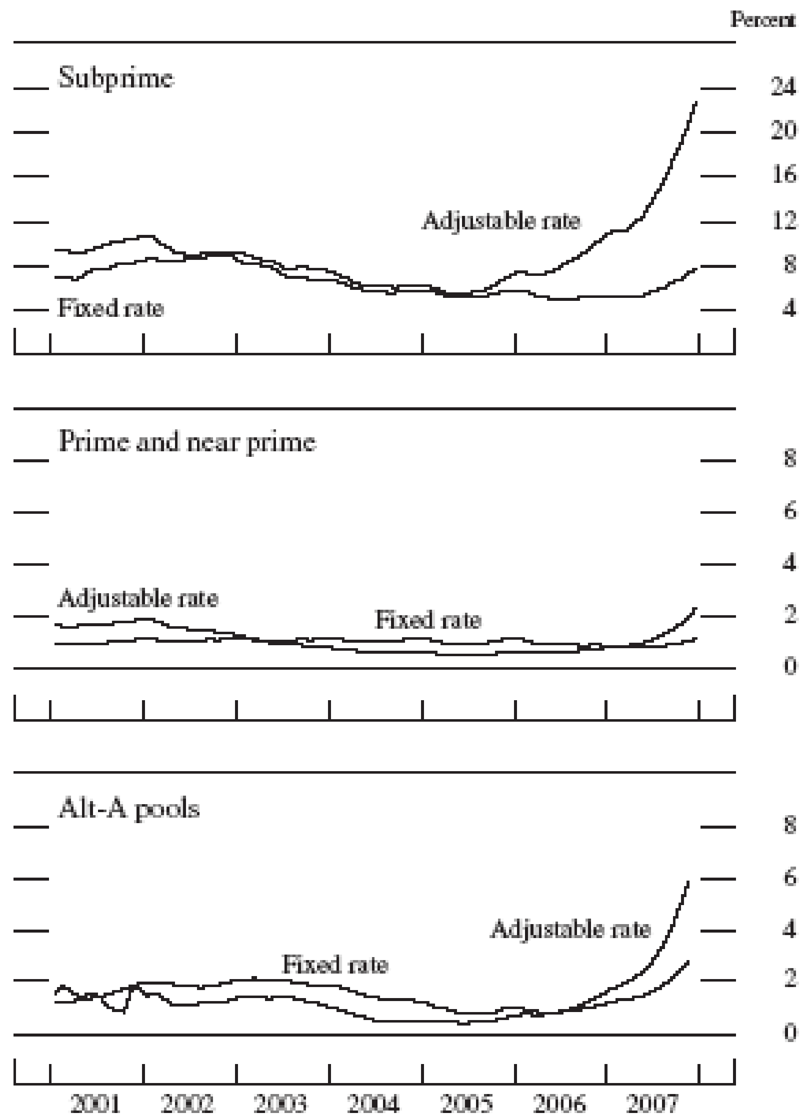
Exhibit 6 Mortgage Defaults and Foreclosures Rates[a]



Source: "Monetary Policy Report to the Congress," Board of Governors of the Federal Reserve System, February 27, 2008, p. 5.

[a] Data is monthly and extends through December 2007, except the "Alt-A pools," which extends through November 2007. "Alt-A" pool mortgages refers to a mix of prime, near-prime, and subprime mortgages.

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Exhibit 7 Global Financial Institutions' Writedowns Related to the Subprime Crisis

	Writedowns for 4Q 2007 (in $ billions)
Bear Stearns	1.9
Citigroup	18.0
Credit Suisse Group[a]	2.9
Goldman Sachs[b]	-
JPMorgan	1.3
Lehman Brothers[b]	3.5
Merrill Lynch[c]	16.7
Morgan Stanley	9.4
UBS AG	13.7
HSBC	3.4

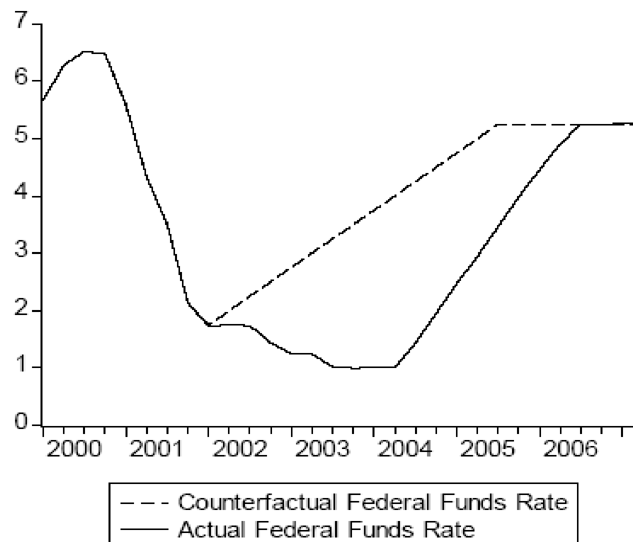
Source: Created by casewriter using data from "Global investment banks and brokers remain challenged after dismal fiscal year end," Standard & Poor's, February 26, 2008.

[a]Chris Hughes, "Credit Suisse plunges on $2.85bn writedown," *Financial Times*, February 19, 2008.

[b]Stephen Bernard, "Goldman Sachs 4th-quarter earnings, risk management make it winner among U.S. investment banks," Associated Press, December 20, 2007.

[c]Includes ABS CDOs, subprime mortgages, and leveraged finance exposures.

Exhibit 8 Fed Funds Rate versus the Counterfactual Fed Funds Rate (%)



Source: John B. Taylor, "Housing and Monetary Policy," September 2007, p. 3, http://www.stanford.edu/~johntay/, accessed February 15, 2008.

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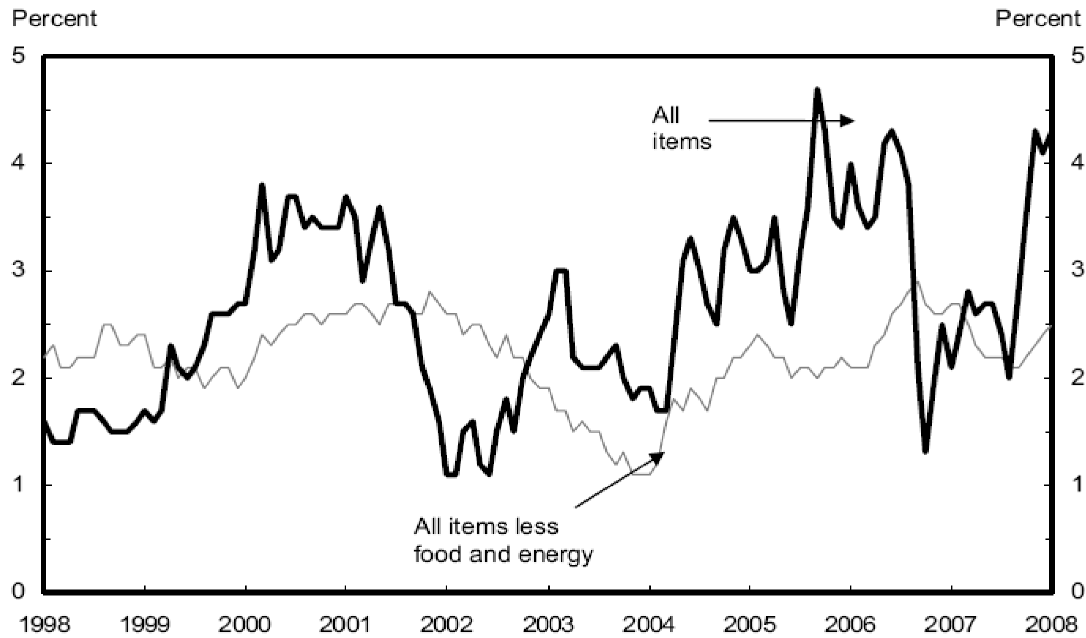
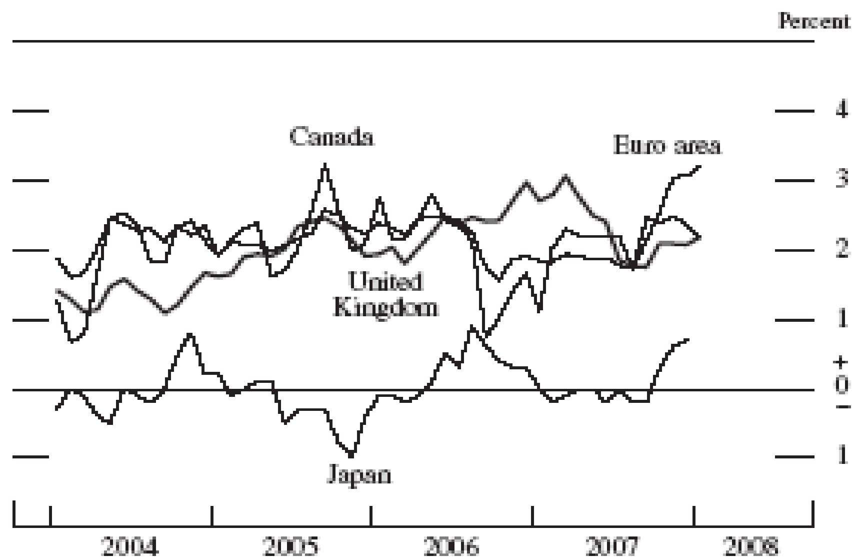
Exhibit 9 Consumer Price Inflation (%)



Source: Bureau of Labor Statistics, "Consumer Price Index Detailed Report," January 2008, p. 3.

Exhibit 10 Trend of Consumer Prices for Major Foreign Economics (%)



Source: Board of Governors of the Federal Reserve System, "Monetary Policy Report to the Congress," February 27, 2008, p. 34.

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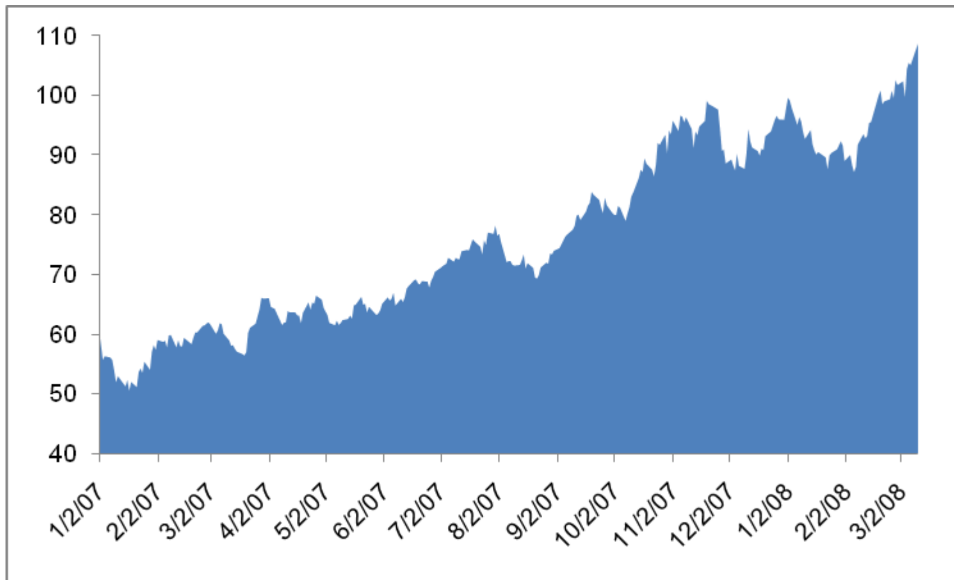
Exhibit 11 Oil Prices (US$ per barrel)[a]



Source: Created by casewriter using data from Global Financial Data, Inc.

[a]Based on the spot price of West Texas intermediate crude oil.

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