No Place To Hide: The Global Crisis in Equity Markets in 2008/09

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Abstract

This paper provides a broad analysis of the effect of the current financial crisis on global equity markets and their major components. We also examine the magnitude of the crisis in terms of value destruction in comparison to other market crashes. In brief, upon looking at return performance across an array of regions, countries, and sectors, broad market averages are down approximately 40% on their end of 2006 levels. While deterioration started in most markets in early to mid 2008, the crisis period of mid September to the end of October 2008 is responsible for the lion share of the collapse with just about all indices falling 30 - 40 % in this short period. Financial sectors have taken a bigger hit than non-financials, though they both suffered similarly during the peak of the crisis. Emerging markets fell more than developed markets but largely because emerging markets end up at the same level despite big gains in 2007. The global nature of the crisis is also apparent from the high correlations between markets and investment styles that further increased during the crisis. As a result, diversification provided little help to investors when needed most as markets dropped in tandem.

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This paper provides a broad analysis of the effect of the current financial crisis on global equity markets and their major components. We also examine the magnitude of the crisis in terms of value destruction in comparison to other market crashes. In brief, upon looking at return performance across an array of regions, countries, and sectors, broad market averages are down approximately 40% on their end of 2006 levels. While deterioration started in most markets in early to mid 2008, the crisis period of mid September to the end of October 2008 is responsible for the lion share of the collapse with just about all indices falling 30 - 40 % in this short period. Financial sectors have taken a bigger hit than non-financials, though they both suffered similarly during the peak of the crisis. Emerging markets fell more than developed markets but largely because emerging markets end up at the same level despite big gains in 2007. The global nature of the crisis is also apparent from the high correlations between markets and investment styles that further increased during the crisis. As a result, diversification provided little help to investors when needed most as markets dropped in tandem.

1 Introduction

At the end of October 2007, despite the tremors from early August, world equity markets measured at an all-time high USD market capitalization. According to Thomson's DataStream data, global equity markets had a market capitalization of more than $51 trillion as of this date. What happened over the next 16 months is nothing short of the largest destruction of equity value in history. By the end of February 2009, global equity market capitalization stood at just over $22 trillion, a drop of more than 56% and a reduction in equity value of more than $29 trillion. This loss in wealth to equity holders is equivalent in value to about 50% of global GDP for 2007.

The current financial crisis has challenged investors' perceptions about equity. The crisis drove down equity levels across the globe, and in nearly every sector and industry. As a result investors have been questioning previously held views about the risk of equity and the benefits of global diversification. The purpose of this paper is to provide a detailed factual backdrop on how equity markets have behaved during this most recent crisis. To do this we will look at equity performance in a series of steps. First we will consider the performance of the global equity market over the past few years and attempt to use the long history of U.S. return data to put this (on-going) market collapse into some kind of historical perspective. We will then look carefully at different parts of the equity markets, cutting them geographically and sectorally, to see how widespread the collapse has been and how different parts of the equity markets have fared. In doing so we will first look at equity return performance values, and later take a closer look at volatilities and correlations. When possible we will link significant economic or policy events from the crisis to the market reactions. For this purpose we provide a timeline of critical financial crisis events in an appendix.

The basic story that will arise is that while the mortgage and banking crises have been ongoing since early 2007, the equity market reaction is basically second order until July/August 2008 and the real equity market action (collapse) starts in the middle of September 2008 with the bankruptcy of Lehman and the bailout of AIG. From September 15 through late October nearly everything fell sharply. The impact was universal and severe. For most indices, these 32 trading days contain the majority of the decline for the year. By the end of 2008, with few exceptions, most equity indices were at 50% or less of their end of 2006 levels, and down 60% from their highs. Unfortunately, despite all of the financial advise about diversification, in this crisis equity investors had no where to hide.

The paper is organized as follows. Section 2 discusses the overall market performance, while Section 3 looks at differences in equity performance at the financial sector relative to the non-financial sector. Subsequently, Sections 4, and 5 zoom in on the performance of countries and industries. Given that the financial sector is at the heart of the crisis, Section 6 studies the financial sector. In contrast, Section 7 studies the performance of different investment styles during the crisis. Sections 8 and 9 shift the focus of the analysis from performance to market volatility and correlations. Finally, Section 10 summarizes and concludes.

2 Overall Market Performance

We begin by looking at the world equity market index to gauge what happened on average across the markets. Figure 1a shows the total return index of the DataStream world market portfolio measured in U.S. Dollars from the beginning of 2007 to the end of February 2009. A summary of the total return behavior (including dividends and share repurchases, but without adjustment for taxes) would say that world equity markets were up in 2007 about 15% and then gave back that gain in a choppy ride over the first 6–8 months of 2008. Then, starting in September 2008, during the crisis period of the credit crunch (the crisis period being defined for our purposes as the close of markets on Friday September 12 to the close of trading on Monday October 27) the index fell precipitously, losing 36.8% over these 32 trading days. Since then the world market portfolio has recovered and lost about 10% of its value twice, and then stumbled downward into 2009 ending February 2009 at its lowest level of the period, down 45.4% since the end of 2006, 52.6% since the end of 2007, and 16.5% since the end of 2008.

The timing and the severity of the crisis over the 26 month period we examine can be seen clearly by looking at a plot of the rolling 30 day (annualized) volatility of world market portfolio in Figure 1b. Using this measure, “normal volatility” would appears to be around 10-12% on an annualized basis. There were several episodes in 2007 and the first part of 2008 where volatility rose temporarily above this level. Several of these events at the time were treated as major disruptions of normal market behavior, especially the August 2007 market crisis triggered by a sudden tightening of credit that ended up squeezing many of the quantitative hedge funds, forcing them to sell equities to provide liquidity. While a crisis at the time, in retrospect, it and the other events pale in comparison to what happened in the fall of 2008. The timing of the onset of the major crisis in the equity markets is clearly evident. While volatility had been low in August 2008, it had started to rise by the beginning of September. We note in the chart the location of September 15, 2008, the day that Lehman Bros files for bankruptcy after failing to find a buyer (as Bear Stearns had done in March). This and the events that followed over the next 30-35 days clearly define a global equity market in crisis. Volatility rose to nearly four times its normal level and three times higher than the highest levels seen in the previous 18 months. In looking at the chart it is hard not to define a period from mid September through the end of October that marks the heat of the crisis. During this period price volatility was sky rocketing, and as we can see from Figure 1a, index levels were falling dramatically. As market index collapse slowed at the end of October, rolling volatility peaked in early November 2008, and then fell, almost as quickly as it had risen, not quite to "normal" levels, but to levels that were about two times the pre-crisis levels. In line with this decline in volatility, the global equity market stabilized somewhat, but the collapse that had been triggered by the credit crisis turned into a fear of a real demand crisis, and equities continued to decline, albeit at a more measured pace. A full set of returns statistics for the DataStream World Market index are provided in Table 1.

Regional market indices experienced a similar pattern of performance, though pre-crisis performance was dramatically different between Developed Markets and emerging markets. Figure 3 plots the total return index for three major DataStream regional markets: the United States, the Developed Markets excluding North America (similar to MSCI's EAFE), and the Emerging Markets. The United States and the Developed Markets ex North America show an amazingly similar pattern (in terms of performance in U.S. Dollars) over the 26 months, with the Developed Markets ex North America ending down slightly more for the period (-47.5%) than the U.S. market (-44.3%). The decline in 2008 for both markets is largely due to the drop during the crisis period, when both markets dropped about 35%. Despite the Developed Markets ex North America including exchange rate changes, the U.S. market has a higher volatility measure in all periods. Also, both markets are down more than 17% in the first two months of 2009. The wealth losses to each market are immense. The U.S. market has given up over $9 trillion of market capitalization since its peak on October 9, 2007, with nearly half of this coming from the 32 trading days of the peak crisis. The other Developed Markets (except Canada) lost almost $14 trillion of market capitalization since their peak on October 31, 2007, although the European portion of this is likely overstated due the currency movements of the last half of 2008.

The Emerging Markets portfolio performs rather differently, at least in the first part of the period. It experiences a significant rise in 2007 (up 43.6%), and stays up around this level through June 2008, before starting a steep decline to end 2008 down 54.4%, with 45.9% of this decline occurring in the 32 day crisis period. The loss of wealth in emerging equity markets is also staggering, with more than $5.2 trillion lost since these markets peaked on October 30, 2007. In this case, only about 50% of this loss occurs during the peak crisis period, consistent with the fact that the Emerging Markets started their rapid decent somewhat before the crisis began, giving back most of the 2007 gains prior to September 1, 2008. So far in 2009, the Emerging Markets are down 11.2%, but this is notably less than the Developed Markets. By the end of our sample period, all the equity markets in all three regions are down at about 60% of the end of 2006 levels. Somewhat surprisingly, despite these large movements and some significant currency adjustments, the Emerging Markets portfolio shows generally less volatility over the period that the U.S. Market portfolio. Detailed statistics for these series are displayed in Table 2.

Thus, we have shown that the equity market reaction to this financial crisis is a situation in which equity markets worldwide have suffered a serious decline, and to a first approximation by a similar amount over the period since the end of 2006. An obvious question at this point is how bad is this market decline compared to previous equity market falls? Since the declines in value are relatively comparable across regions we will examine this question by comparing the U.S. market reaction to the long history of returns using the S&P500 index.

Using the Ibbotson data from December 1925 – present, the U.S. market represented by the S&P500 index has experienced ten market declines of more than 20%. Table 3 shows the dates and the decline from market peak to bottom for each of these 10 events. Following the market peak in September 2007, the current down market (continuing to run through the end of February 2009) has dropped 54.1% and is the second largest decline for the S&P500 index in this sample period. The current decline is surpassed only by the market decline at the outset of the Great Depression, where 34 months after the peak in August 1929, the S&P500 index had fallen 83.4%. The current crisis is now slightly worse than the 13 month decline starting in February 1937 (-50.3%) and the 21 month decline starting in December 1972 (-42.6%). To compare it to a more recent crash, the 18 month S&P decline resulting from the bursting of the dot com bubble saw the market index decline just under 30%. Figure 3 plots the return index change from the peak for the market collapses listed in Table 3. From this picture it is clear that while the current market decline is not the steepest or the fastest, it is the second deepest, and it is currently outpacing the market decline at the start of the Great Depression.

This market decline has had a significant economic consequence on the wealth of equity holders. In terms of just the S&P500 stocks, the loss in market capitalization during the current decline is \$7.2T, or roughly half the value of U.S. GDP in 2007. With such an evaporation of wealth, albeit paper wealth, it is not surprising that consumption and savings behavior have changed sharply in recent months. The length of the current market decline (through February 2009) is already longer at 17 months than the sample average of 16.8. Perhaps most concerning is the uncertainty with which the past gives us any idea of how long it will take for prices to return to their previous peak levels. Omitting the initial Great Depression crash, the average number of months to return to peak is 44.4. This would suggest that it will be midyear 2011 before the S&P 500 is back at or above its 1,500 peak level. Alternatively, one might argue that it is not right to disregard the Great Depression as an example, given the similarities in terms of the global nature of the crisis and the severity of the economic contraction. If the Great Depression market decline is the guide to how long until we return to the Fall 2007 price levels, history suggests that it will take over 15 years (from September 1929 until December 1944) to recover from the price decline and surpass the previous peak level. Applying this to the current situation would suggest that it will be until 2022 until we see the S&P500 back at or above 1,500.

3 Market Sector Performance

As the epicenter of this current crisis is the financial sector, our next step is to look into any differences in equity performance of the financial sector relative to the non-financial sector. This sectoral decomposition of the world market portfolio as provided by DataStream indicates, not surprisingly, that the financial sector of the world market has been much more negatively affected over the past 26 months than the non-financial sector of the world market. As the plot displayed in Figure 4 and the statistics in Table 4 suggest, the financial sector return index (in U.S. Dollars) fell significantly more (-63.9%) compared to the non-financial sector (down only 38.3%) over the sample period. The volatility of the financial sector returns is nearly 50% higher than the non-financial sector returns. In 2007, while the non-financial sector of the world market was up nearly 20% in U.S. Dollar terms, the world financial sector performance was basically flat, and volatilities were basically comparable. Looking at the financial sector performance in 2007 as displayed in Figure 4, one can note the drop in late July through mid August related to the quantitative hedge fund crisis in which there was a liquidity squeeze following the liquidation of two large Bear Stearns funds. Taken at the time to be a serious crisis, the global financial firms shook this off, rising through October 2007 and then beginning an inexorable and unprecedented decline, with minor respites in April and mid July of 2008, falling 51.7% in 2008, punctuated by a sharp drop (40.5%) during the peak of the crisis from mid

September through the end of October. The financial sector also fell sharply in the first two months of 2009, ending down 25.6%.

In contrast to the financial sector, we can see from Figure 4 that the non-financial sector maintained its valuation through late spring of 2008, only then did it begin a decline that also saw it down 40.6% in 2008 with a drop of 35.7% during the peak period of the crisis. Although over the entire period the non-financial sector performed better than the financial sector, with the financial sector dropping to only 40% of their end of 2006 values and the non-financial firms dropping only to 60% of their end of 2006 value they fell by similar amounts during the peak of the crisis. Figure 4b, which plots the equity performance only since the crisis period, it is apparent the performance of the two groups is very similar during the crisis and only in mid November (11/12/2008) when the U.S. Treasury announced that they will not be purchasing securities with the TARP funds does financial sector performance fall below that of the non-financial sector.

Comparing the financial sector and the non-financial sector for each of the three main regions, United States, Developed Markets ex North America, and Emerging Markets, the plots in the three panels of Figure 5 reveal some notable patterns. In the United States, the financial sector clearly underperformed the non-financial sector over the entire sample period. The financial sector suffered a notable 10% drop during the August 2007 credit squeeze, and although it gained back this loss over the next few months, it then fell about 70% over the next 16 months, to end February 2009 at only 30% of its end of 2006 level. The U.S. non-financial sector held up until the crisis period in September 2008 when it gave up 32.3% which was nearly all of its entire loss for the 26 month period (35.9%). In the other Developed Markets, the difference in performance between the financial and non-financial sector is not as significant. By June of 2008 the two series had already developed a 20% performance gap (financials underperforming non-financials), and that gap grew slightly during the crisis period with financials dropping 41.7% and non-financials dropping 34.5%. The financials sector ended the sample down 65% on the end of 2006 levels, about 25% more than the non-financial sector. In the Emerging Markets, Panel C of Figure 5 shows that there is much less of a difference in performance between the financial and non-financial sectors. Both sectors were up significantly in 2007, 36.4% for financials and 46.2% for non-financials, as emerging markets were still hot. Both sectors fell sharply in mid January 2008 in response to the increased fears of a U.S. recession and dissatisfaction with the announcement of the first U.S. stimulus package of a mere $145B. Both Emerging Markets sectors maintained value through the end of May 2008, they both started to slide after that, with the peak crisis period being just the steepest section of a persistent 6 month decline that saw the financial sector lose more than 56% and the non-financial sector lose more than 61%, with more than 45 points of this loss occurring in the crisis period. As can be seen in the figure, over the entire sample period the Emerging Markets financial and non-financial sector lost roughly similar amounts, down 45% and 40%, respectively.

It is also interesting to visually compare the two sectors regionally. A plot showing all six series is displayed in Figure 6. Several things jump out from this presentation. The series seems to bunch into three groups and merge into two groups by the end. The U.S. and Developed Markets financials are one group with roughly similar behavior, and notably underperforming all the other indices. The U.S. and Developed Markets non-financial sector behave very similarly over the entire period, and although outperformed by the both Emerging Markets sectors in the first 18 months, the Emerging Markets sectors collapse on to the U.S. and Developed Markets non-financial sector series by the crisis period, and the four series move similarly thereafter. That the Emerging Markets financial sector performs more in line with the non-financial sectors is most likely explained by the fact that Emerging Markets financial firms have lower exposures to toxic mortgage securities than the Developed Market banks. This figure serves to highlight that the developed country financial sectors were the focus of the market's concerns and were the most negatively affected.

Of the two developed financial sectors, the U.S. financial sector is the worst performer in two ways. First it loses the most value over the sample period, dropping 71.1%, and it has far and away the most volatility of any of the other series, especially during the crisis period and the first two months of 2009. This latter point is despite the fact that the U.S. series has the advantage that its volatility is not influenced by exchange rate fluctuations. Volatility for the other two financial sectors are generally quite comparable and only one half to two-thirds of the high levels of volatility for the U.S. financials. In contrast, on the non-financial side, all three regions have similar volatilities across periods and at levels that are generally slightly less than the volatility of the Developed Market ex North America and Emerging Markets financial sectors.

4 Country Market Analysis

The Developed World ex North America and the Emerging Markets combine a large number of countries from different parts of the world into their portfolios. In this section we examine these regions more closely by looking at some of the major countries (or groups of countries) within them to see how similar the impact of the financial crisis on equity values has been on a more localized level. To facilitate the analysis in a manner consistent with the broad regional grouping above, we use gross return data from MSCI Barra for this section.

Figure 7 displays the return index for the major subsets of the developed world. Panel A shows the gross return index of the MSCI market in U.S. Dollars for the United Kingdom, Europe ex UK, Japan, Pacific ex Japan and the United States. Panel B shows the gross return index measured in local currency for the same constituents. In both plots there is a noticeable deviation in performance following the August 2007 credit scare, with Japan performing much more poorly and the rest of the Pacific performing more strongly than the U.S. and European markets. In local currency it appears as though the return indices start sloping down as of the second half of 2007, due to the depreciating U.S. Dollar over this period, while the indices in U.S. Dollar terms remain somewhat flatter. While performance varies prior to the peak crisis period, all of the indices fall sharply during this 32 day period, and in U.S. Dollar terms end the sample period quite close together.

The statistics for the corresponding series are shown in Tables 6a and 6b. As evidenced in Table 6a, in U.S. Dollar terms all of the indices are down between 43% and 52% for the sample period and report similar levels of USD return volatility. In all cases, the drop during the 32 peak days of the crisis accounts for the vast majority of the declines in 2008. Volatilities in this period are also approximately four times higher than the values in 2007. All of the indices are down double digits in the first two months of 2009, though volatility is only twice the average 2007 level.

In local currency terms, we see from Table 6b that Japan's market performance is less attractive than in U.S. Dollar terms, with the Japanese market down the most of all the indices in local currency over the entire sample period. Except for the first two months of 2009, Japan also has higher performance volatility in local currency than U.S. Dollar terms, suggesting that the JPY/USD exchange rate movements are negatively correlated with the yen returns. On the other hand the UK market performance moves from worst to best when seen in local currency terms. It is down the least of the 5 indices over the entire period and fell much less in 2008 than the other markets. The difference of course is because of the significant pound depreciation against the U.S. Dollar in the last 6 months of 2008.

A breakdown of the Emerging Market index is displayed in Figure 8, with Panel A in U.S. Dollar terms and Panel B in local currency terms. Rather than look at individual countries for the Emerging Markets, we look at the major Emerging Markets regional indices and the BRIC index. Statistics for the regional Emerging Market indices are shown in Table 7a (U.S. Dollar terms) and 7b (local currency terms). Looking at the two plots in Figure 8, while there is some dispersion amongst the regional Emerging Market indices, they all outperform the U.S. market in 2007 and early 2008. There is more dispersion in the USD return chart, as the U.S. Dollar was depreciating against most Emerging Market region currencies in 2007 but appreciated strongly against most of them in 2008. But regardless of the currency of the return, all of the Emerging Market indices come crashing down to the same relative value level as the USD index (end of 2006 = 100) once the peak crisis period hits. By the end of the sample, Latin America fares better than EMEA in U.S. Dollar terms, largely due to the terrible performance of Russia relative to Brazil and the sharper drop in the Russian ruble. In local currency terms, all of the indices except EMEA are down less than 40% on their end of 2006 levels. So while the fall from the peak is larger for the all of the Emerging Market regions, and the fall during the crisis was larger than for U.S. equity, a long term USD investor is no worse off due to the crisis over the past 26 months for holding Emerging Market equity than U.S. equity.

5 Industry Performance

Although we say earlier that the financial sectors in most markets fell further than the non-financial sectors, in this section we take a closer look at the performance of more disaggregated industry portfolios for a variety of major countries and regions. Despite the large number of statistics, due to the potential interest, we present detailed statistics and plots for the 10 level 3 industry classification defined by DataStream for six different market groupings. First we present and focus our discussion on performance of industries of the United States, the Developed Markets ex North America, and the Emerging Markets. However, because of the size of the Developed Market portfolio, we also present the industry results of Japan, the UK and a European portfolio not including the United Kingdom (DataStream's European Monetary Union grouping.)[1]

The graphs are shown in Figure 9 (various panels). With 10 lines, the figures can be rather difficult to read clearly, but they are useful for getting a general impression of what happened before looking at the detailed statistics displayed in Table 8 Panels a–f. Starting with the United States, it is apparent that the financial industry has suffered the most from this crisis. It has declined in value by at least 20% more than any of the other U.S. industries, falling a staggering 71% since the end of 2006. In the United States, as in almost all of the other regions/countries the Oil&Gas and Basic

[1] This grouping includes Austria, Belgium, Cyprus, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, Netherlands, Portugal, Slovenia, and Spain.

Material industries significantly outperformed all others through the middle of 2008 (up over 35% in 2007), but Basic Materials fell sharply and ended 2008 mixed in with most of the other industries being down about 35%, while Oil&Gas held up the best losing only 25.5% on its end of 2006 value by the end of February 2009. Most of the industries were basically flat prior to the crisis period, though Finance and especially Oil&Gas and Basic Materials were in noticeable decline for several months before the crisis period. In the United States, the crisis period hits all industries rather comparably. Health Care is down the least in the heat of the crisis, losing only 23.5%, while Basic Materials lost 49.5% in these 32 trading days. Industrials, along with Financials, have taken the biggest hit since the turn of 2009, with industrials (including GE) giving up 25% and financials another 33% in the first two months of the year. For U.S. financials, the first two months of 2009 are nearly as bad as the peak crisis period. The largest daily returns for each industry tend to be in the 10% range for positive returns and 8-9% for the worst down day. The dates of these extremes are not surprisingly bunched during the crisis period; however, the financials worst down day is a 15% loss on December 1, 2008.

The pattern for the other Developed Markets displayed in Panel B of Figure 9 and Table 8b, is somewhat similar to the United States. Finance is the worst performing industry, though relatively less so than in the United States. Oil& Gas and Basic Materials are top performers until July 2008 when they both fall significantly. At the end of the period, the industries are somewhat more fanned out than in the United States, with Telecom, Utilities and Healthcare near the top, and Finance, Technology and Basic Materials near the bottom. Telecom suffers the least, losing only 21.4% with much of this loss occurring in 2009 The crisis period was the hardest on basic Material and Industrials each losing over 40%, while Healthcare was least affected losing only 21% in that period. Financials suffer the worst since the turn of the year, giving up another 25% of their value in U.S. Dollar terms.

The Emerging Market industrial picture is notably different. First of all the financial industry is not the biggest loser. In fact, it sits comfortably in the middle of the pack for almost the entire sample period. This again highlights our earlier point that so far this is a financial crisis of the developed market players. While Emerging Market financial firms are affected by this crisis, they are not at the center of it, as are the Developed Market financial firms. The Emerging Market financial firms are no more affected than non-financial firms in the Emerging Markets. However, it is ominous that the Emerging Market financials are down nearly the most of any of the industries so far in 2009, losing 17%, second only to Consumer services that is down 18%. Technology firms turn out to be the biggest underperformers in the Emerging Markets, down over 52.3% for the entire period. Health care is the best performing industry in the Emerging Markets, suffering only a 15.5% loss over the entire period, and a minimal 4.0% in 2009. Basic Materials stands out on the plot for the Emerging Markets as the best performer over most of the sample. By May 2008, it is up over 12.0% on the end of 2006 levels, but proceeds to do a nose dive into the crisis, dropping over 62% in 2008, including 54.3% during the crisis, to end down almost 32% over the period.

For the industries in Japan, the United Kingdom and the EMU in Panels D, E and F of Figure 9, the results look much like the plots for the other Developed Markets in Panel B. From Tables 8d, e, and f we see that the financial industry is down the most in all three markets (more than 65% in U.S. Dollar terms), followed by basic materials, consumer services, industrials, and technology is various orders. The best performing industries again tend to be Telecom and Utilities. One interesting exception to note is the Japanese utility industry; while down only 5.8% over the period, it actually experienced a U.S. Dollar gain during the peak period of the crisis.

6 Financial Sector Performance

Since the financials sector as at the core of this market crisis, in this section we take a closer look at the financial industry and is major sub-industries, i.e. banks, insurance, real estate and financial services. Again we will consider these indices by the three region breakdown of the world, the United States, the Developed Markets ex North America, and the Emerging Markets.

In the United States, Figure 10a shows the total return index performance of the U.S. financial industry and the above mentioned 4 sub-industries. Summary statistics for these series are displayed in Table 9a. The figure clearly shows that all four sub-industries followed the same pattern as the aggregate financials industry. For much of the period, Banks (comprised of the U.S. commercial banks) underperformed the other sub-industries. However, just prior to the peak crisis the Financial Services sub-industry, consisting largely of the investment banking firms, became the low performer and remained at the bottom until 2009 when the problems amongst the large commercial banks dropped the Bank sub-industry back to the bottom. For the entire period, all the financial sub-industries fell significantly in value. Insurance, the best performer of the group, was down 61.6% for the period, while Banks, the worst performer, fell 77.4%. Banks also exhibit the highest volatility of the group, with annualized volatility in excess of 100% since the crisis period, including the first two months of 2009. It is also notable that the best and worst return days for most of these sub-industries fall outside of the main crisis period. For three of the four series, November 24, 2008 is the largest single return day and December 1, 2008 is the single largest drop in value of any day in the sample. As evidence that the financial crisis is not over yet, three of the four groups have lost 29% of their value in the first two months of 2009, including a 46.5% decline for the U.S. banks portfolio.

For the Developed Markets excluding North America, Figure 10b shows that the 4 sub-industries in the financial industry all tightly follow the aggregate industry performance. As with the United States, the Insurance group slightly outperforms the others falling only 58.5% for the period, and the Bank group is the worst performer, falling 68.5%. The crisis period was harder on these portfolios than it was on the U.S. equivalents. Only the Real Estate group for the Developed Markets did not fall more than its U.S. counterpart during the crisis. In the first two months of 2009, only the Financial Services portfolio for the Developed Market ex North America has declined more then its U.S. counterpart. Table 9b shows all the summary statistics for the Developed Markets ex North America financials and its 4 subgroups.

As we saw earlier, the financials sector was not as badly affected in the Emerging Markets. Figure 10c shows that performance along with the performance of the same 4 sub-industries. It is apparent that the Banks sub-industry constitutes most of the weight in the aggregate industry for the Emerging markets as the two series are virtually on top of one another. In the middle of the sample period, the Real Estate groups moves significantly above the others, but it along with the Financial Services portfolio experiences a sharp drop in mid January 2008 in the market turmoil surrounding the announcement of the first U.S. stimulus package, the two FED cuts in 8 days and the bankruptcy of Northern Rock in the United Kingdom. Real Estate in the Emerging Markets proceeds to drop sharply for the next year, ending the sample period down 63.5%, the most of any of the Emerging Markets finance sub-industries. As with the other two regions, Insurance holds up the best throughout the crisis. It ends the sample down only 31.3% (in U.S. Dollar terms), despite a 43.7% decline during the peak period of the crisis, due to a nice recovery in the last two months of 2008. Nonetheless, all four groups are down between 12 and 23% in the first two months of 2009.

Plots showing the performance of the financial industry and the 3 subgroups for Japan, the United Kingdom and the EMU countries are shown for the reader's pleasure in Figures 10 d, e and f.

7 Style Portfolio Performance

Another interesting question regarding equity market performance during the financial crisis whether the crisis had differential impacts on any of the popular style portfolios commonly used in investing.

We are attempting to gain access to some professional style portfolios for various markets, but have taken a first step at this by analyzing the two most basic style factors, growth versus value and size in the U.S. and EAFE market using MSCI style portfolios. We obtained the MSCI large and small core portfolios and also the standard growth and standard value portfolios for the U.S. and EAFE groupings. The plots of these are shown in Figure 11. Panel A shows the U.S. style portfolios performance (in U.S. Dollar), and Panel B shows the EAFE style portfolio performance (in LC). While the series are very close together for the first 7 months, there is some separation from late July to October 2007, and that degree of separation basically continues through the crisis period and to the end of the sample period. In both plots, the growth portfolio outperforms, and the small portfolio underperforms. By the end of the sample period the difference between these two series is about 10 index points in both markets.

8 Volatility

As we saw in Figure 1b, the volatility of the global equity market had a striking pattern over the sample period. A few small bumps of increased volatility in the first 20 months of the sample are completely overwhelmed by the massive increase in volatility that began in September 2008. In this section will take we look at a rolling volatility measure and some implied volatility indices derived from exchange traded options to examine how volatility behaved across our three major market regions.

Figure 12 displays the plots of annualized 30-day rolling volatility of the total return index (U.S. Dollar) for the Emerging Market portfolio, the U.S. portfolio and the Developed Markets ex North American portfolio. It is shocking that all three plots are virtually identical, and virtually the same as the plot for the global market. Volatility in all three markets is highly correlated over our sample period and very similar in absolute level. While the Emerging Markets volatility rises more than the Developed Markets in the first couple of turmoil periods, the increase around the peak crisis period is nearly identical, with all three measures rising to 75-85% on an annualized basis.

In Figure 13 we plot a series of implied volatility measures for the U.S. market and some of the major European markets. These implied volatility measures are forecasts of expected volatility over the next 30 days, on an annualized basis taken from prices of options on the market indices. First of all, once again, the series for the U.S. S&P500, the UK FTSE100, the German DAX, the French CAC 40, and the Dutch OEX, are all virtually on top of one another. Comparing the patterns of the implied volatilities with the moving average volatilities in Figure 12, we see that the two are also very similar. It appears that rather than anticipating the volatilities in the future, the implied volatilities largely reacted to changes in actual volatility measured in the market. It is the case that near the end of the sample the implied volatilities were noticeably overestimating actual historical volatility, perhaps building in the probability that the crisis would not abate. Unfortunately, the implied volatilities at the end of the sample (February 2009) were still predicting market volatility over the next 30 days at levels twice the pre-crisis average.

9 Correlations

The last issue we will look at is the structure of correlation amongst returns over the sample period. There are many ways we could do this and we have taken three different approaches. The first is to look at the changes in average cross country correlations at the market index level for the Developed Markets and the Emerging Markets in the pre and post crisis period. Another approach is to look at correlation across industries within countries/region and the correlation within industries across regions. Finally, since we are dealing with daily data and the synchronicity of daily returns is in question as events move around the globe, we look at the temporal structure of daily correlation pre and post crisis to see if there has been any change in the transmission of price shocks across markets from the Pacific region to the European region to the U.S. region.

First let's look at simple cross country/regional correlations. These correlations are done on a daily basis using calendar days so it is possible that there may be some degree of misalignment in measuring correlation effects. Nonetheless we take daily returns from MSCI for the United States, United Kingdom, Europe ex UK, Japan and Pacific ex Japan as well as the three Emerging market regions, EM-Asia, EM Latin America and EM EMEA (Europe, Middle East and Africa). We measured the average daily correlation amongst the gross returns to these portfolios (in U.S. Dollar terms). It is apparent that there is a non-trivial increase in correlation in the crisis period (9/12/08-10/27/08), but a much less significant increase in correlation for the post crisis period (10/28/08 – 2/27/09). In the crisis period itself, the Developed Markets see an increase in correlation of 41%, more than the 36% increase amongst the Emerging Markets and the 35% increase for the cross market correlations. This is again some evidence that this crisis itself was really a problem in Developed Markets, and that it is more sensitive to linkages across Developed Markets than Emerging Markets. However, in the post crisis period, the correlations amongst the Developed Markets drop back much closer to their pre-crisis levels than correlations amongst the Emerging Market or even the cross market correlations.

With regard to industry correlation, there is a general increase in the correlation across industries within a regional market (not reported). While the correlation increases, it does so from a high average level to begin with, and is largest during the peak crisis period and then returns to something close the its pre-crisis level in the latter part of the sample. What we do show is the data on the impact on the average correlation within an industry across regions. Table 11, displays these results. For every industry there is an increase in the average correlation amongst its daily returns across the United States, Developed Markets ex North America, and Emerging Markets regions. The equal weighted average across industries is an increase from 0.440 to 0.596, or about a 32% rise. The average correlation drops back in the post crisis period but is still higher than in the pre-crisis period. This may be evidence that the crisis is still continuing, albeit at a somewhat milder fashion than in September and October. For some industries such as utilities the increase in average correlation is very large (although on a small starting value), while for others such as Basic Materials it is hardly noticeable and not economically meaningful.

Finally, in an attempt to better understand the transmission of price relevant information during the crisis, Table 12 displays the pattern of leading and lagged correlations across the three major regions of the world: Pacific (PAC), Europe (EUR) and the United States (USA). The idea is to see if there is any meaningful change in the pattern of price shock transmission across markets. It is also a way to determine if there is a market in which key price-relevant information is first made public. The top part of Table 12 shows the temporal pattern of correlation between the pairs of markets in the pre-crisis period. So, for example, the price change in the United States on day *t* is correlated with the price change in the Pacific market on day *t+1* at a level of 0.591, while the this same day *t* Pacific price change is only correlated with the day *t* U.S. market price change at a level of 0.073.

Looking at the correlation in the pre-crisis period compared the crisis period, several thing jump out. There is a noticeable increase in temporal transmission of price shocks. A price shock in the United States on day *t* is much more correlated with the price reaction in the Pacific on day *t+1* and even Europe on day *t+1* that pre crisis. Moreover, a shock to the Pacific market in day *t* has a much stronger effect on the European markets in day *t* than in the pre-crisis period. Also, the transmission from Europe to the United States on day *t* has also grown much stronger, rising from a correlation of 0.484 to 0.646. It remains that shocks to the Pacific markets do not have much of an impact on the U.S. market in the same day. Thus, it appears that Europe and the United States have been the primary locations for disclosure of important price information into the markets during the crisis. This is a final piece of evidence suggesting that this crisis is largely the making of the world's Anglo Saxon banking sector.

10 Conclusion

The current financial crisis has challenged investors' perceptions about equity. The crisis drove down equity levels across the globe, and in nearly every sector and industry. As a result investors have been questioning previously held views about the risk of equity and the benefits of global diversification. This paper provides a detailed factual backdrop on how equity markets have behaved during this most recent crisis, considering the performance of the global equity market over the past few years, in aggregate as well as by country and industry. In addition to performance, we investigate volatilities and correlations, and link significant economic or policy events from the crisis to the market reactions.

In summary, the equity market reaction is basically second order to the mortgage and banking crises is second order until July/August 2008, and the real equity market action (collapse) starts in the middle of September 2008 with the bankruptcy of Lehman and the bailout of AIG. Equity markets around the world universally took a deep dive in the period from September 15 through late October. For most indices, these 32 trading days contain the majority of the decline for the year. By the end of 2008, with few exceptions, most equity indices were at 60% or less of their end of 2006 levels, and down 50% from their highs. Unfortunately, despite all of the financial advise about diversification, in this crisis equity investors had no where to hide.

Figure 1a: World Market Portfolio Total Return Index (USD)

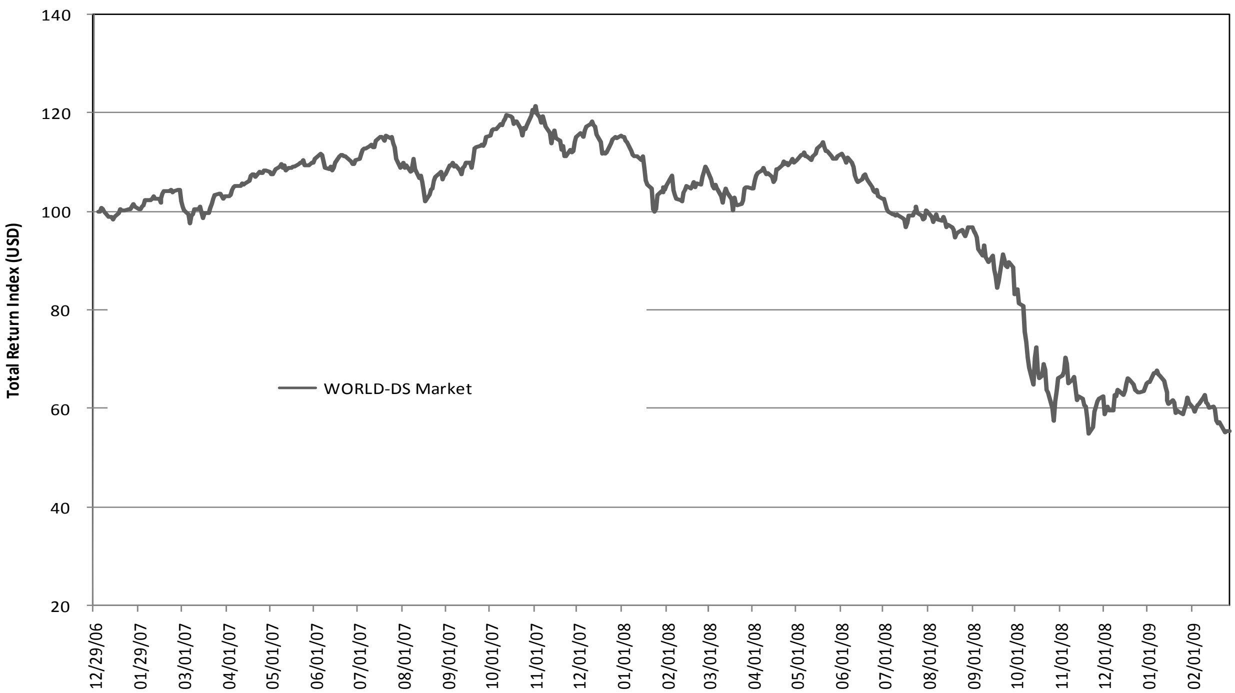


Figure 1b World Market Volatility

30 day moving average annualized standard deviation of the total return index on DS World Market

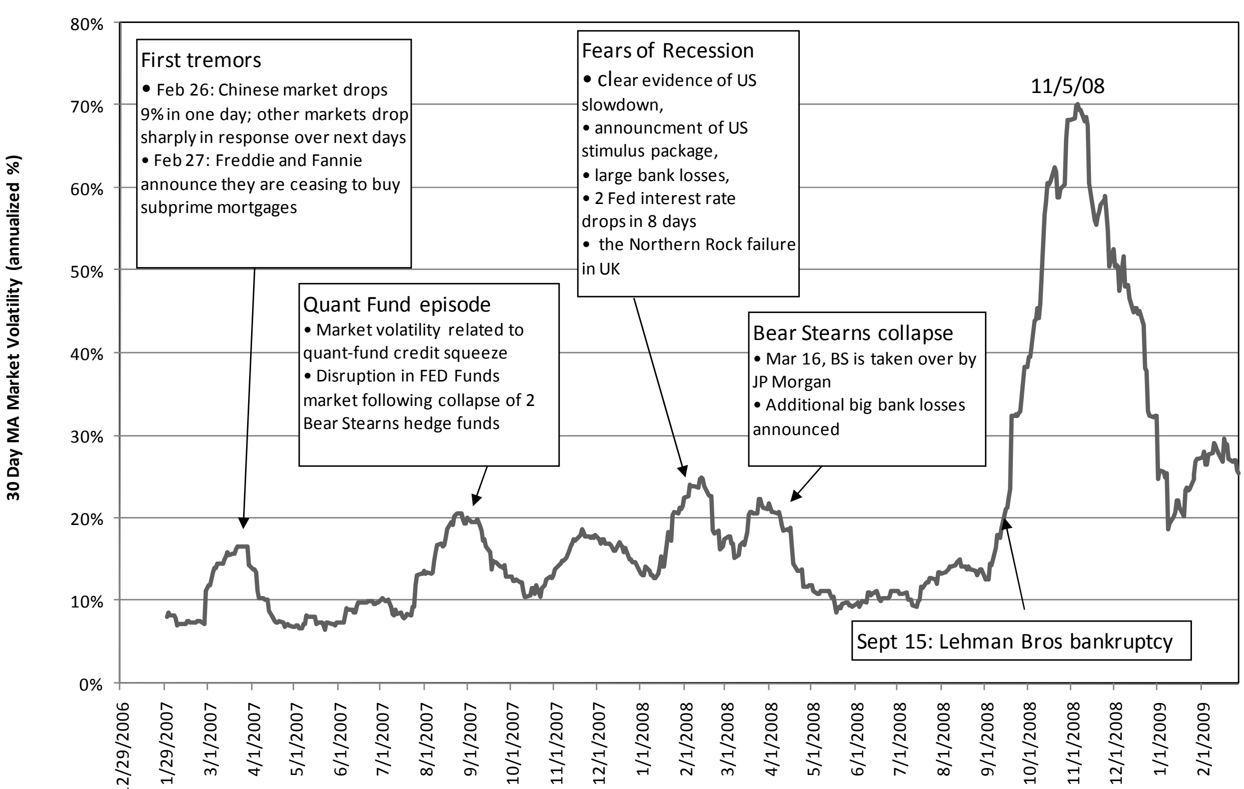


Figure 2: Total Return Index (USD) for Major Component Markets: US, Developed Markets ex North America, and Merging Markets

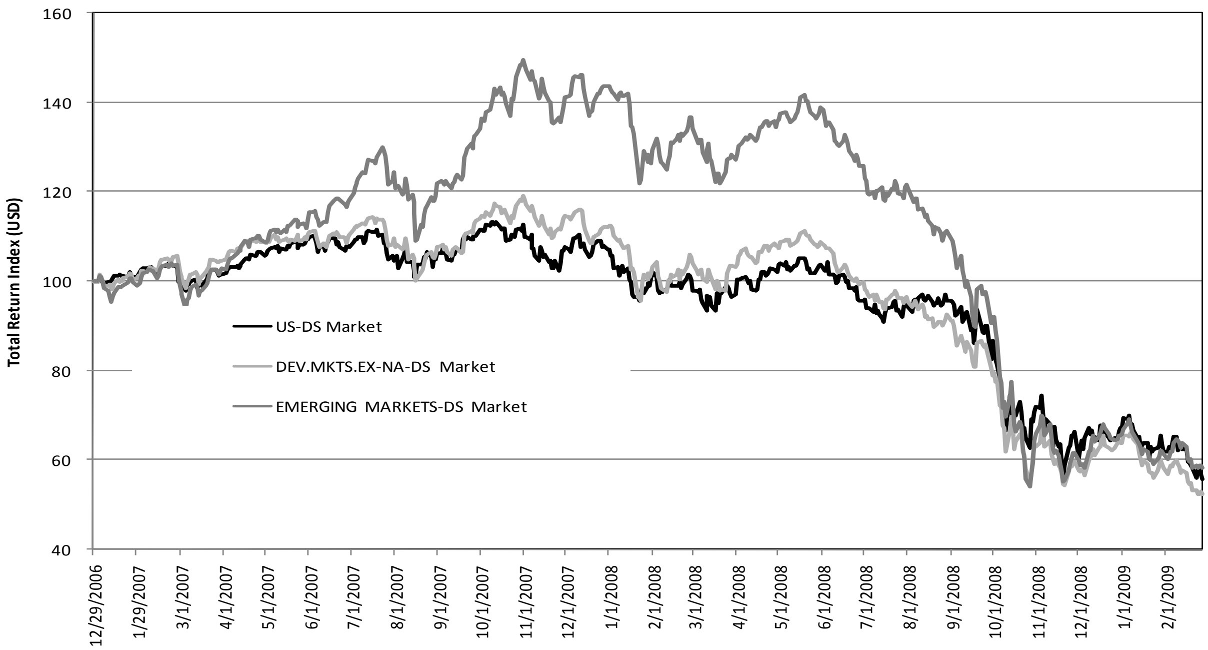


Figure 3: Major US Market Declines since 1926

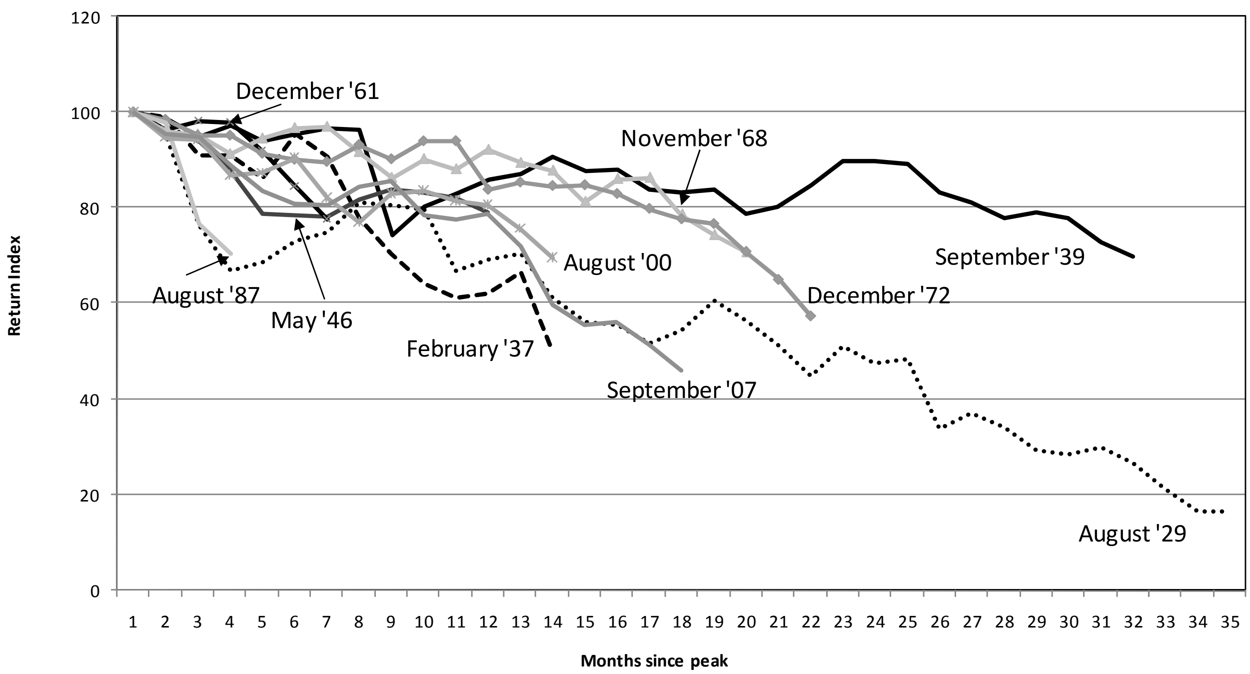
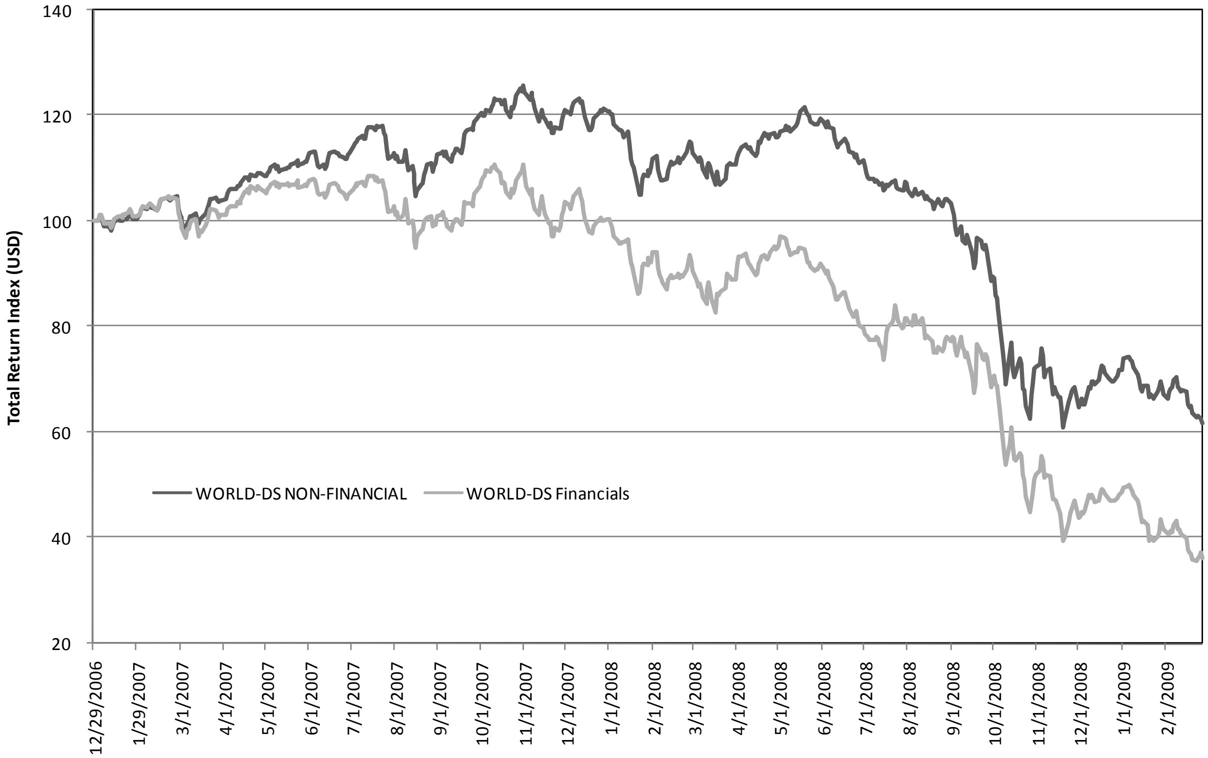


Figure 4: Financial and Non-Financial Sectors for World Market (USD)

Panel A 12/29/06 – 2/29/09



Panel B: 8/29/08 – 2/20/09

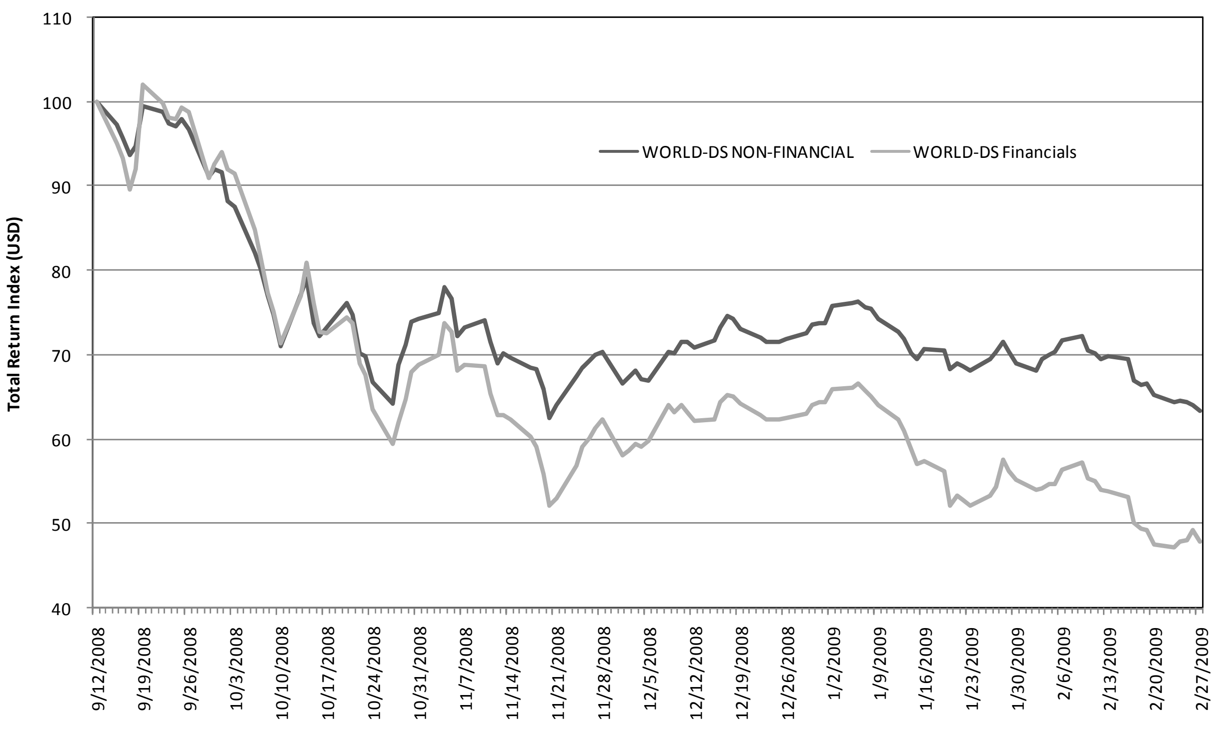
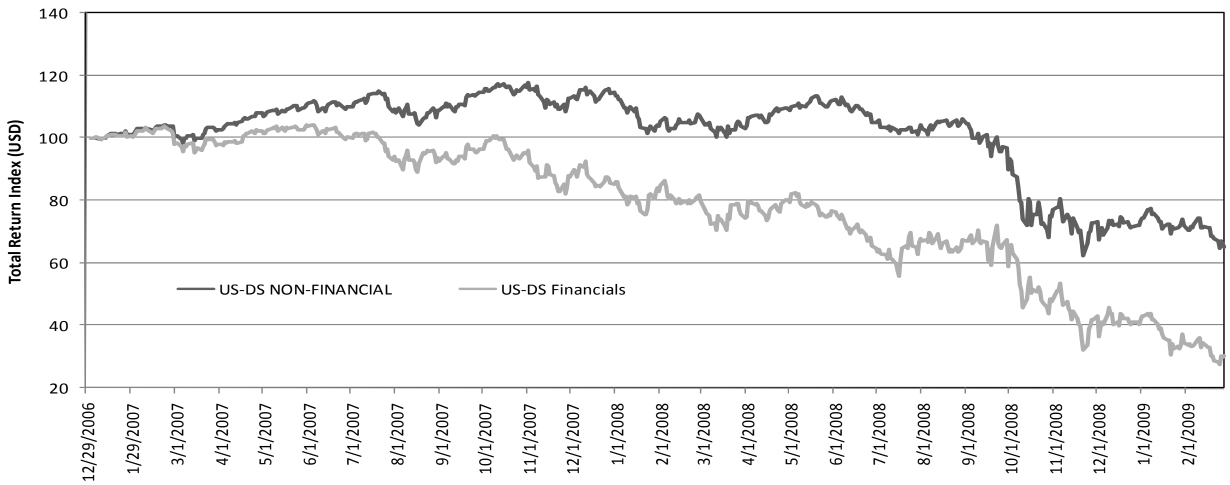
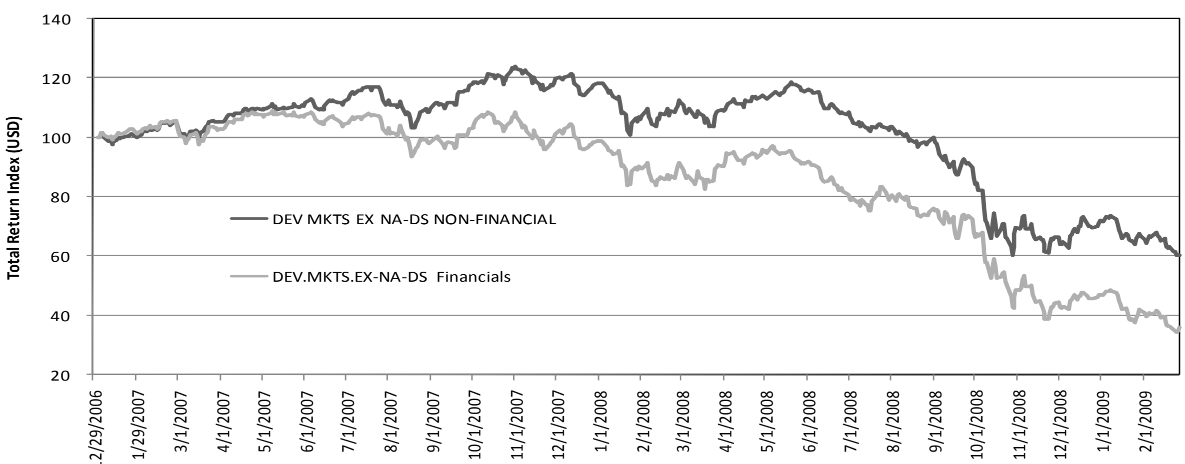


Figure 5: Financial and Non-Financial Sectors by Major Component Markets

Panel A: US Financial and Non-Financial Sectors (USD)



Panel B: Developed Markets ex-NA Financial and Non-financial Sectors (USD)



Panel C: Emerging Markets Financial and Non-financial Sectors (USD)

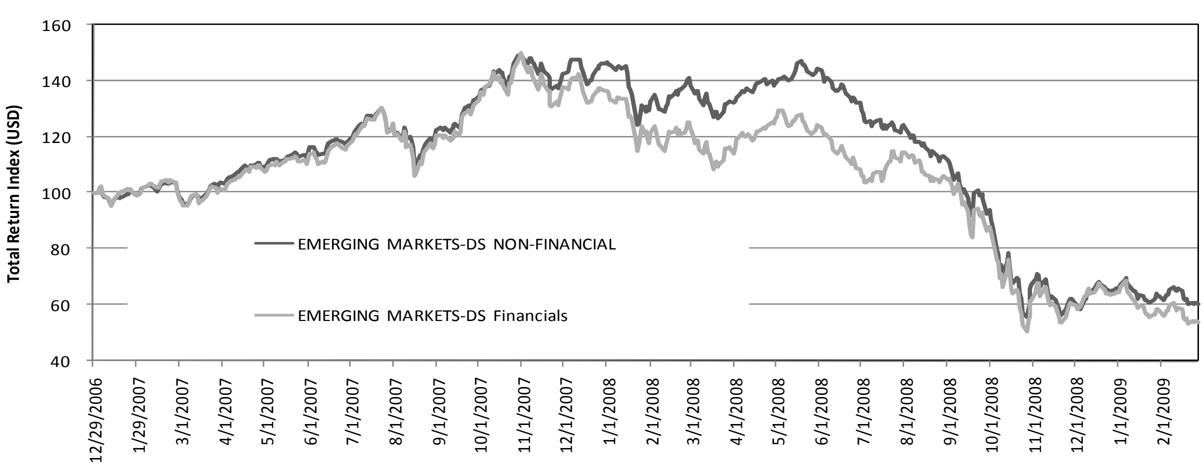


Figure 6: Financial and Non-Financial Sectors for US, Developed Markets ex NA, and Emerging Market Regions

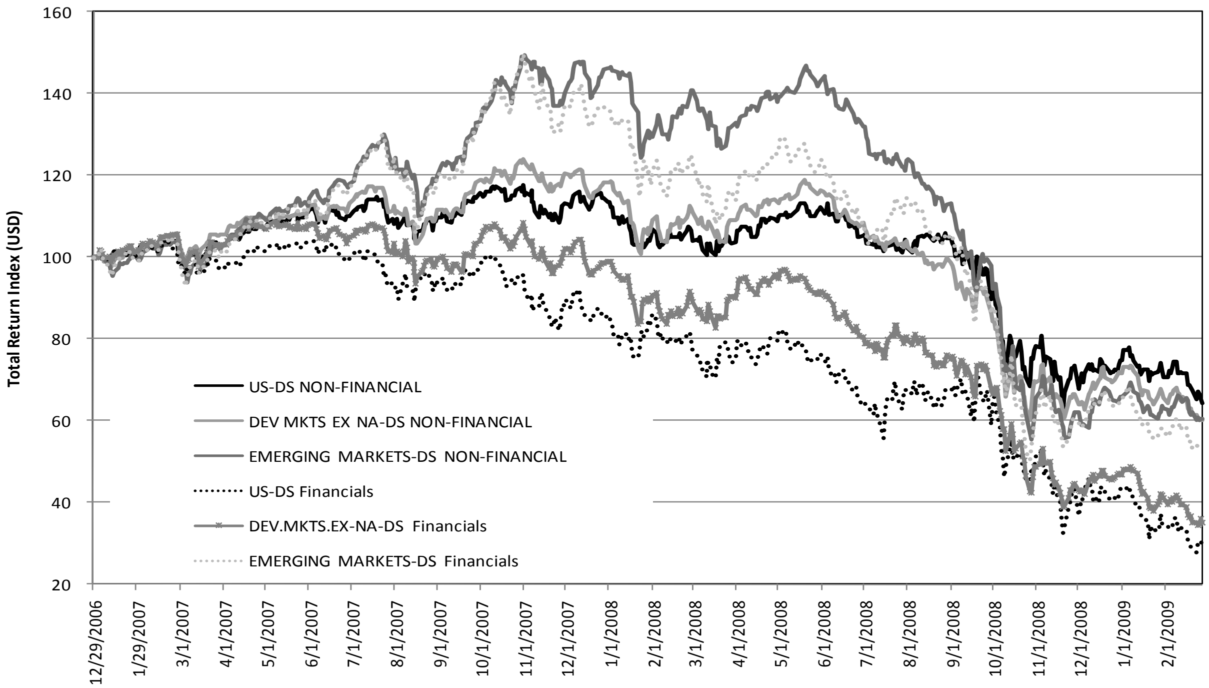
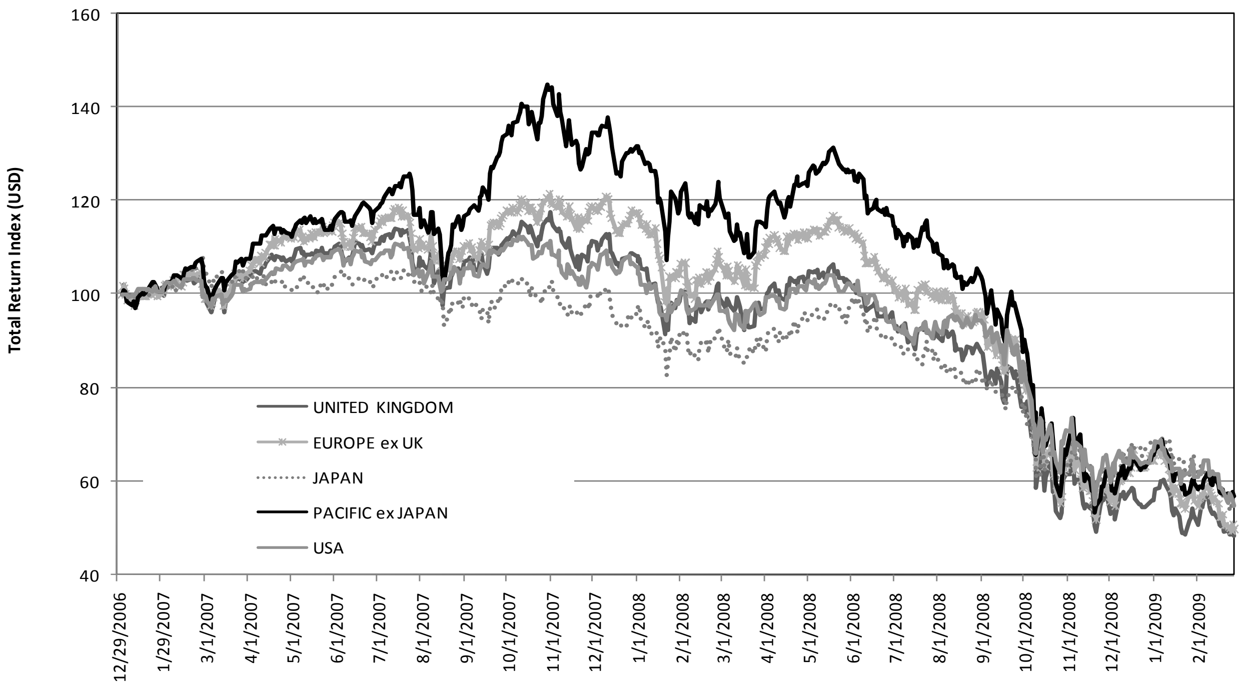


Figure 7

Panel A: Developed Country Markets (USD)



Panel B: Developed Country Markets (Local Currency)

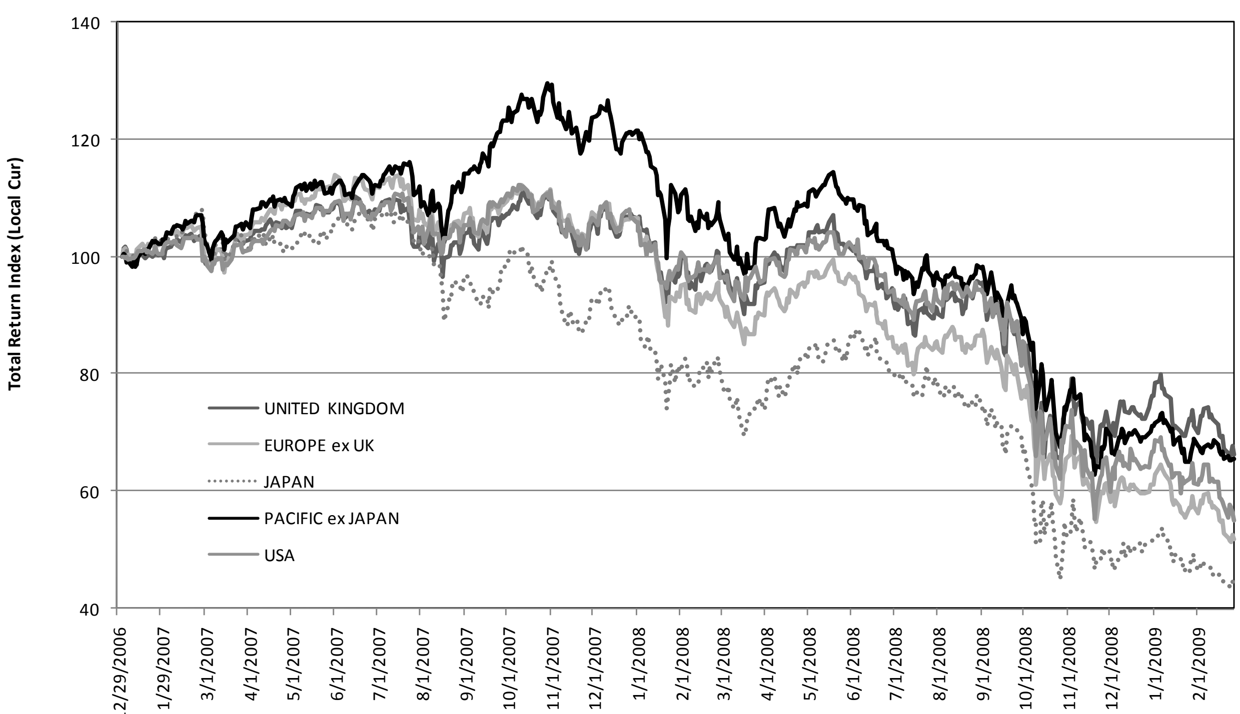
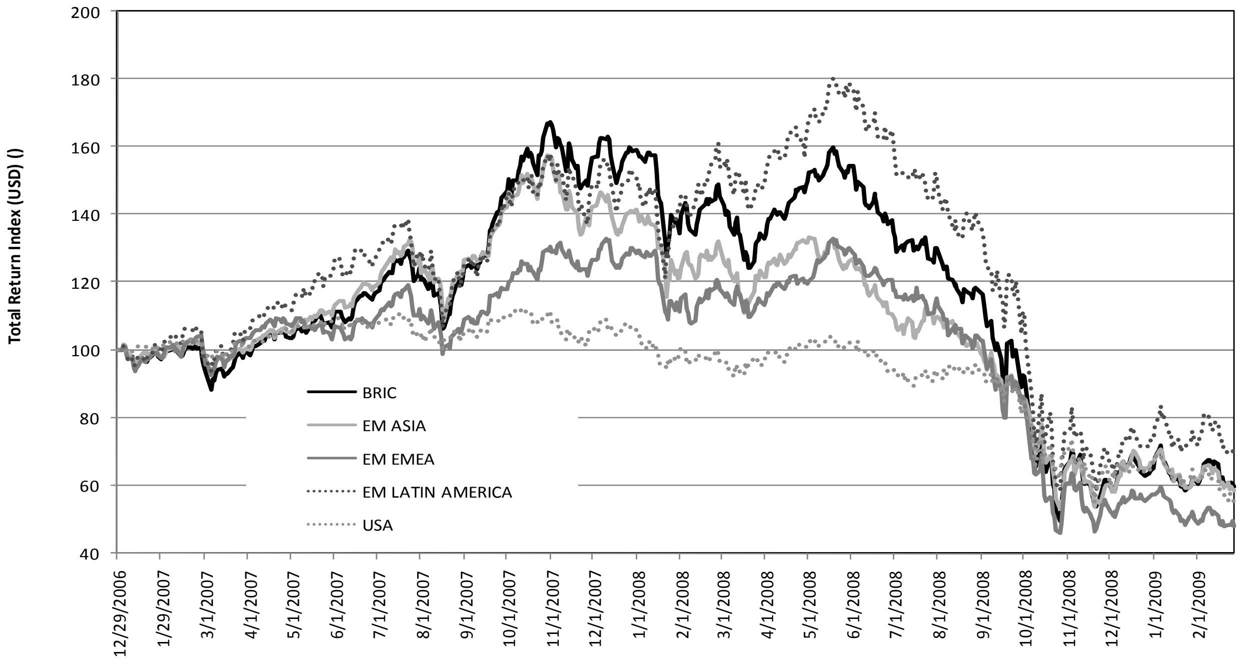


Figure 8

Panel A: Emerging Market Regions and USA (USD)



Panel B: Emerging Market Regions and USA (Local Currency)

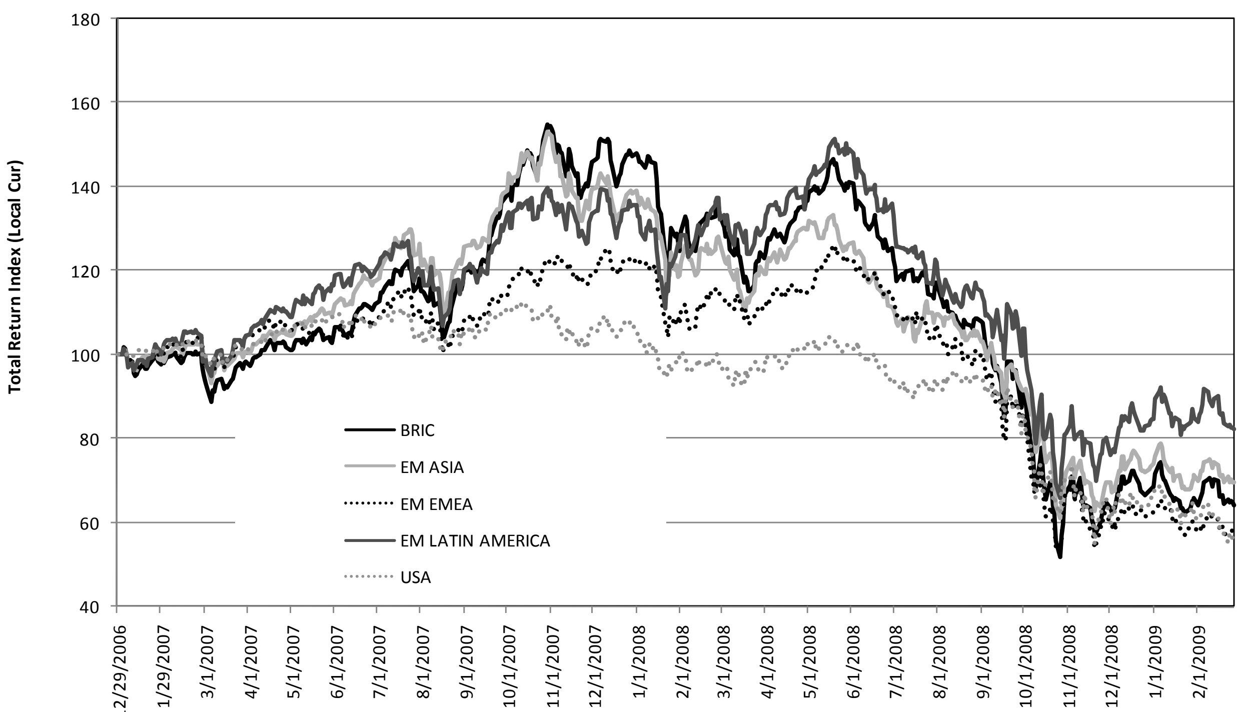
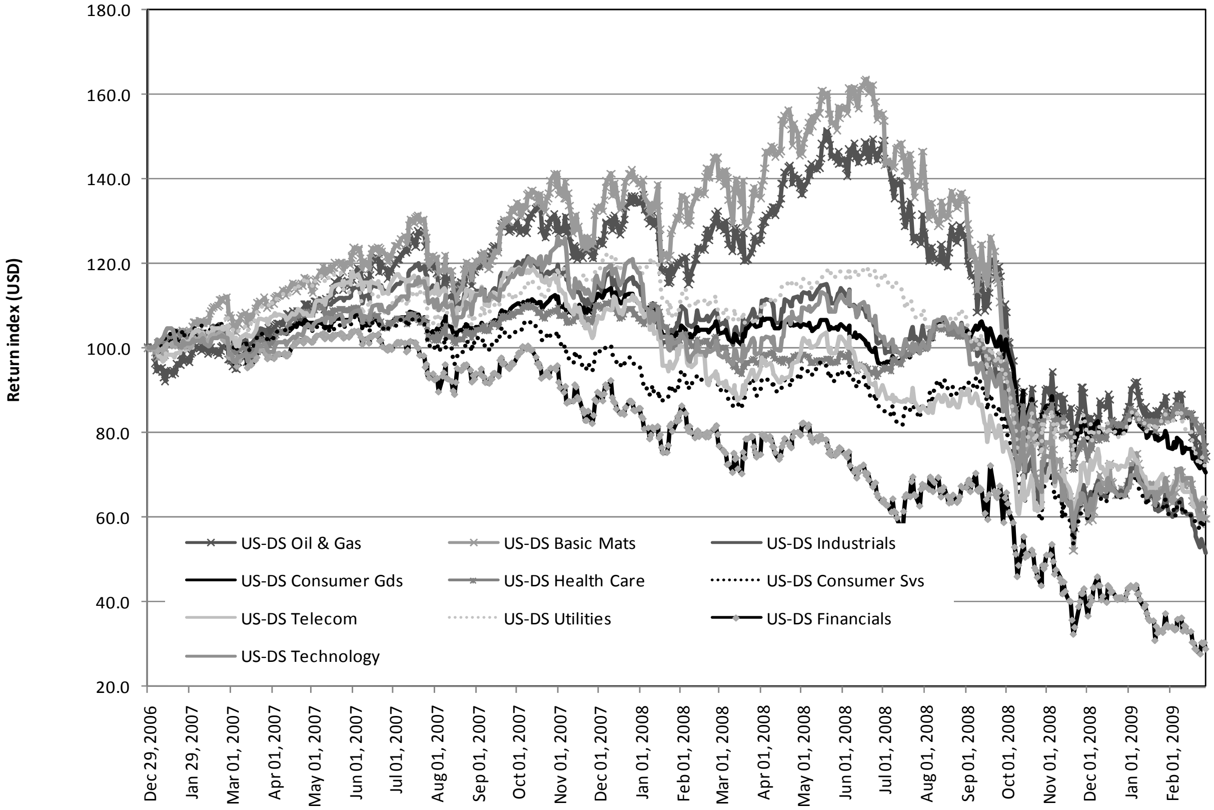


Figure 9 Total Return Index for Industry Portfolios by Country/Region

Panel A: US Market Industries



Panel B: Developed Markets Ex North America Industries

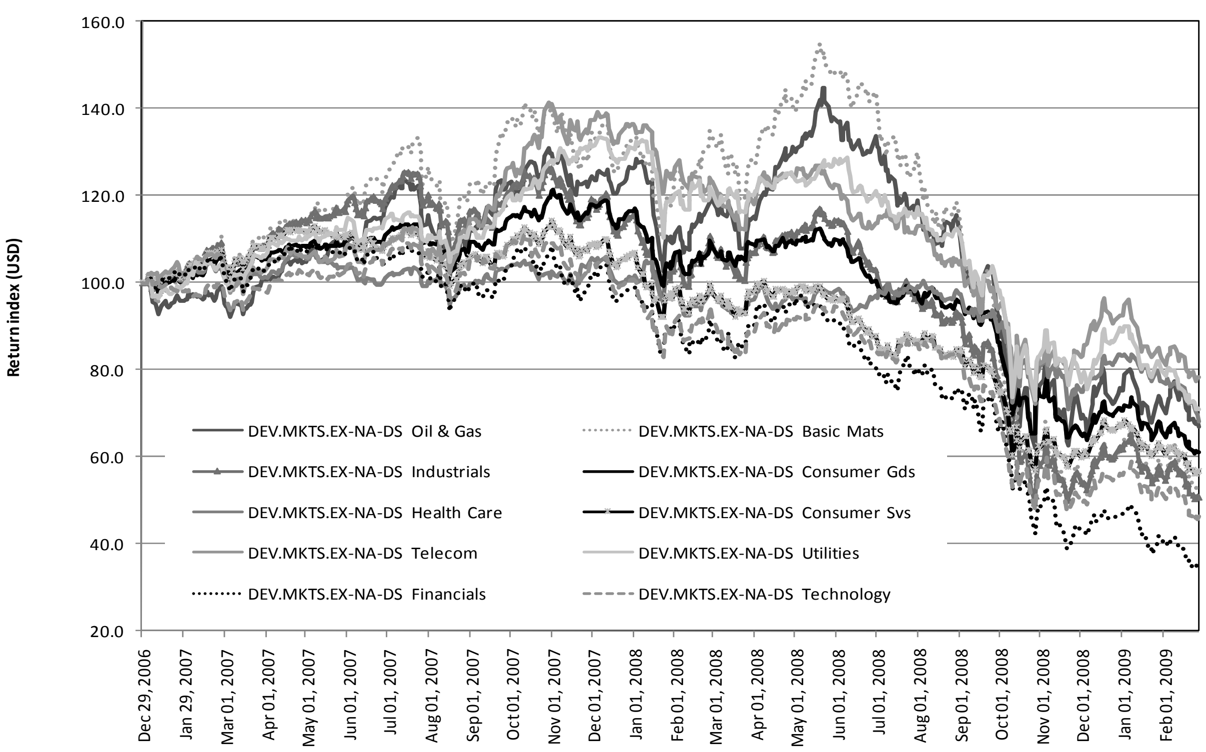
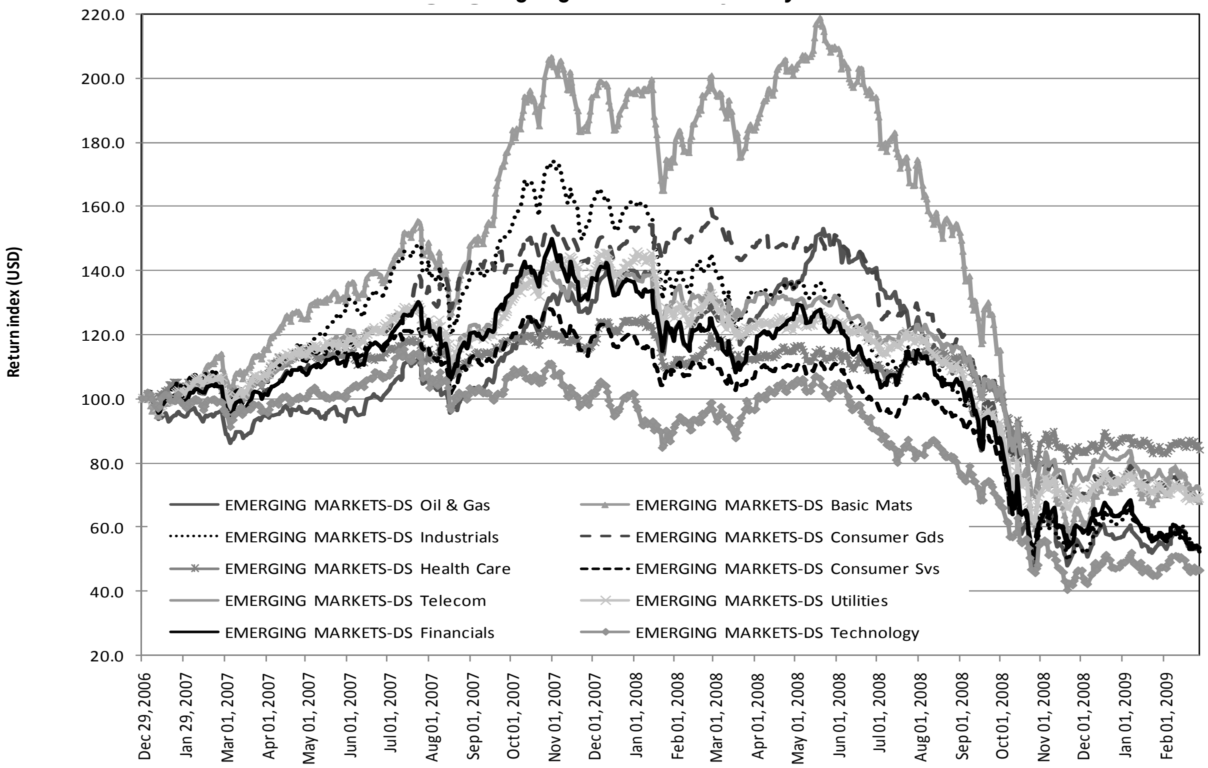


Figure 9 (con't)

Panel C: Emerging Market Industry Portfolios



Panel D: Japanese Market Industry Portfolios

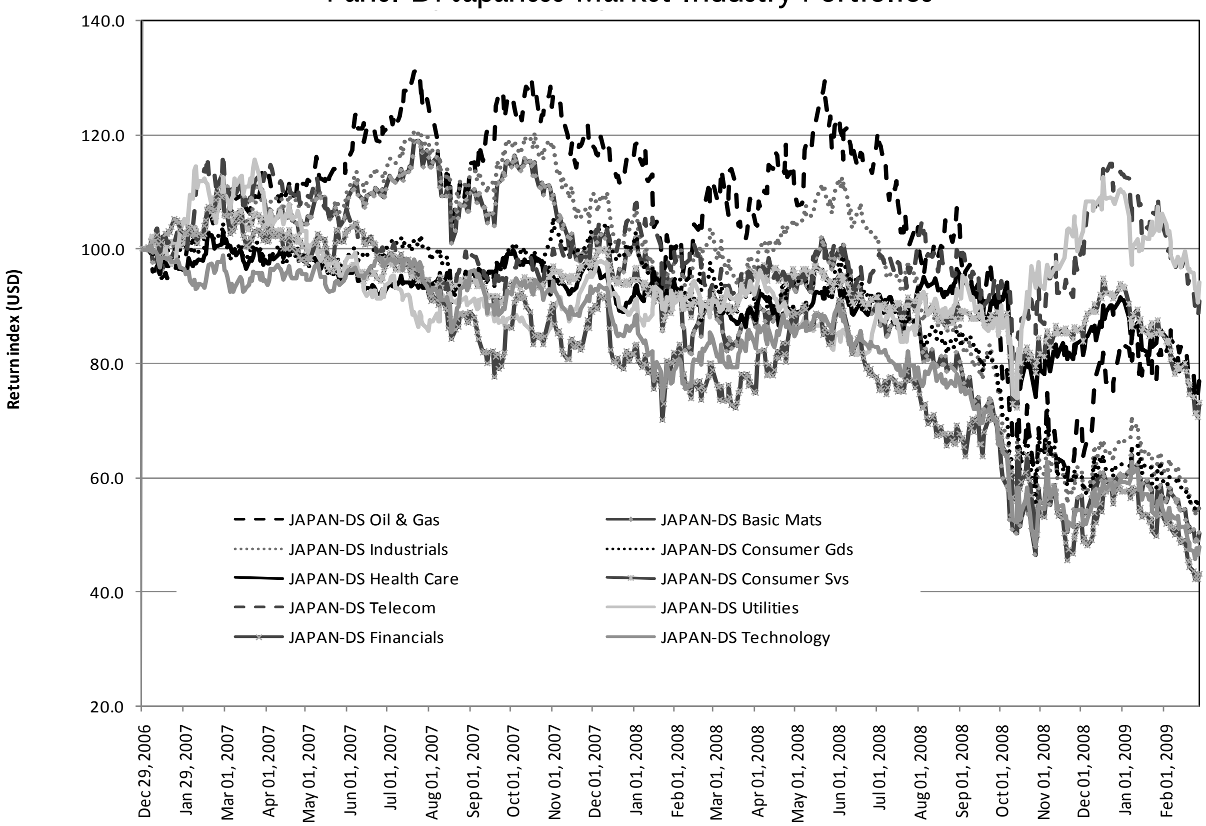
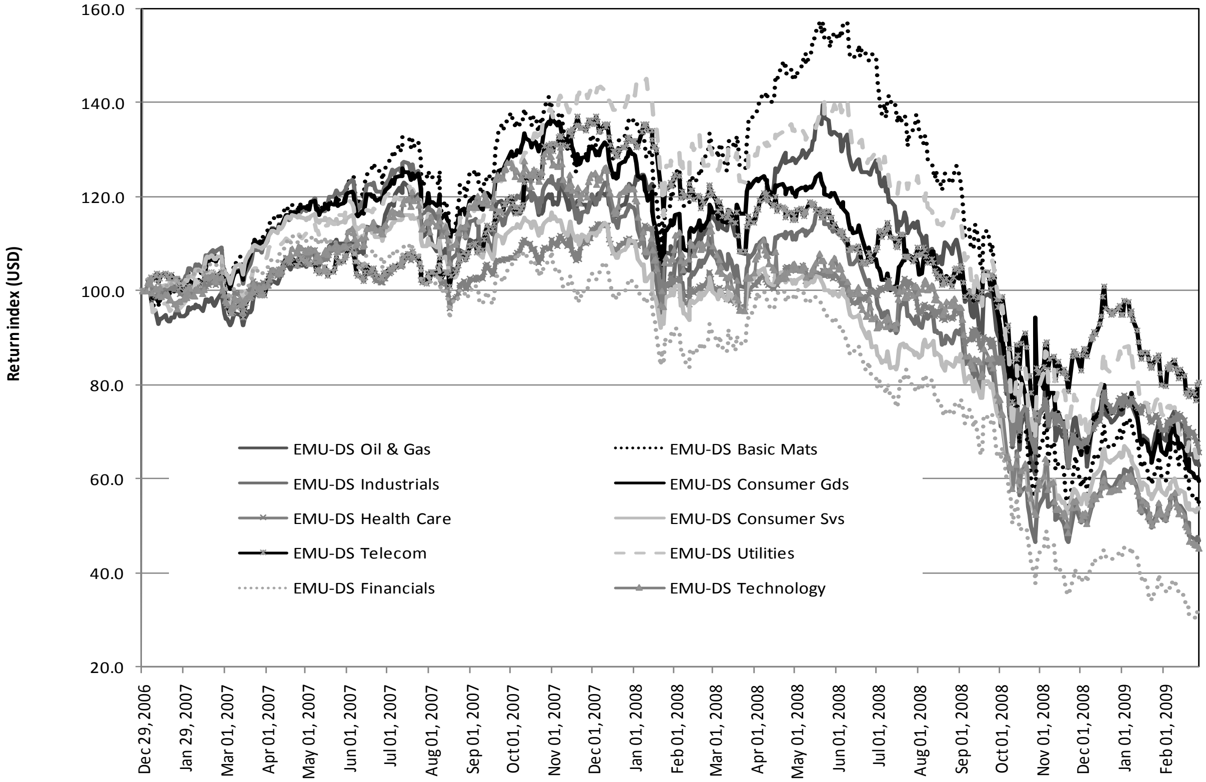


Figure 9 (con't)

Panel E: EMU Market Industry Portfolios



Panel F: UK Market Industry Portfolios

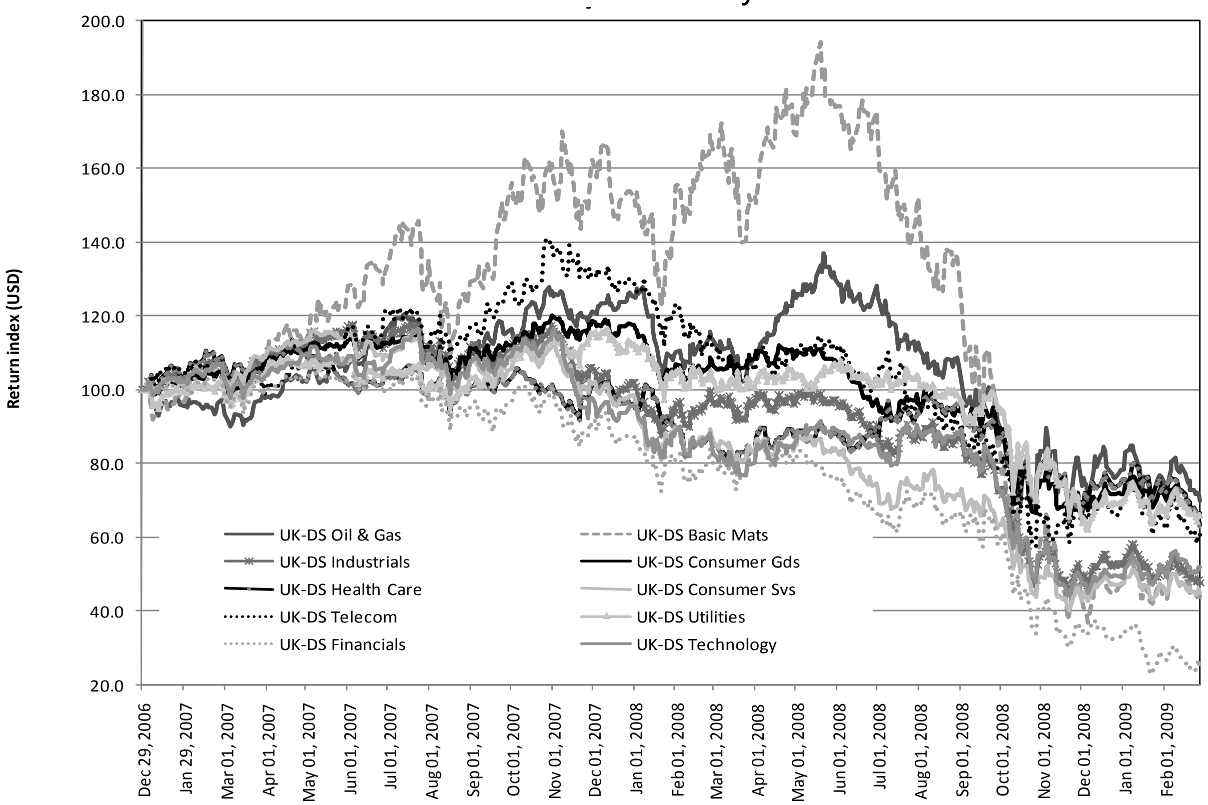
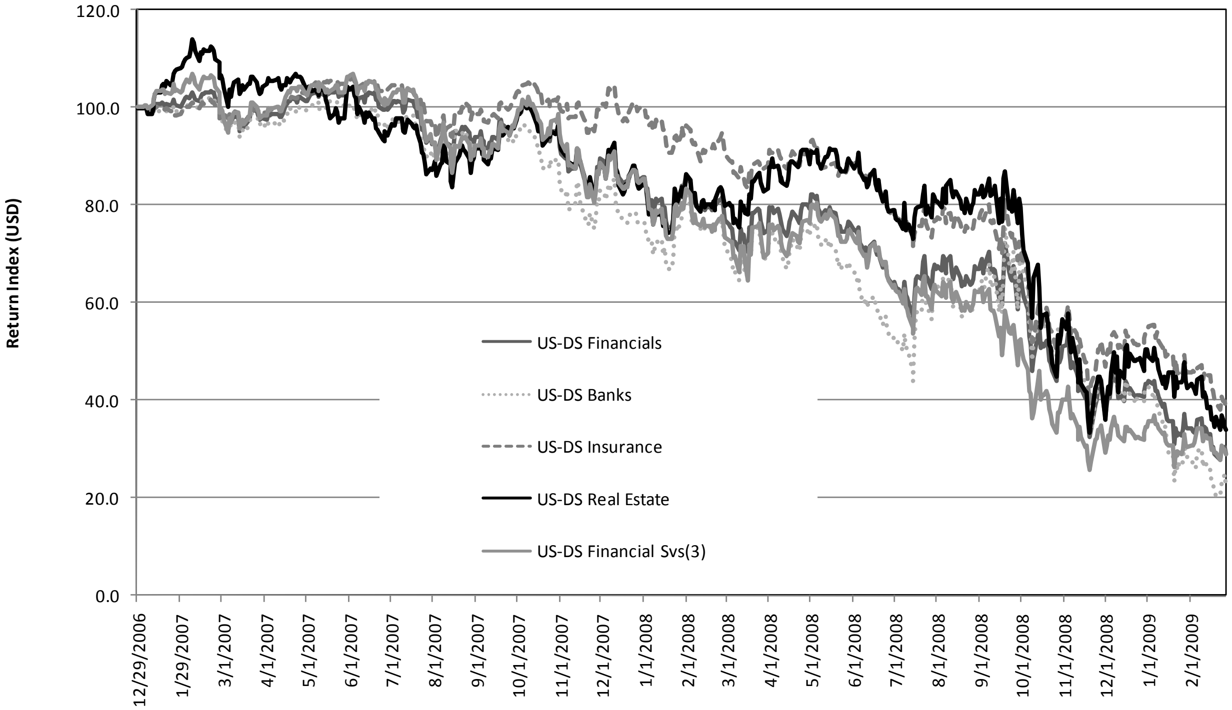


Figure 10 Total Return Index for Financial Industry and Components Country/Region
Panel A: US Financials and Components



Panel B: Developed Markets Ex North America Industries

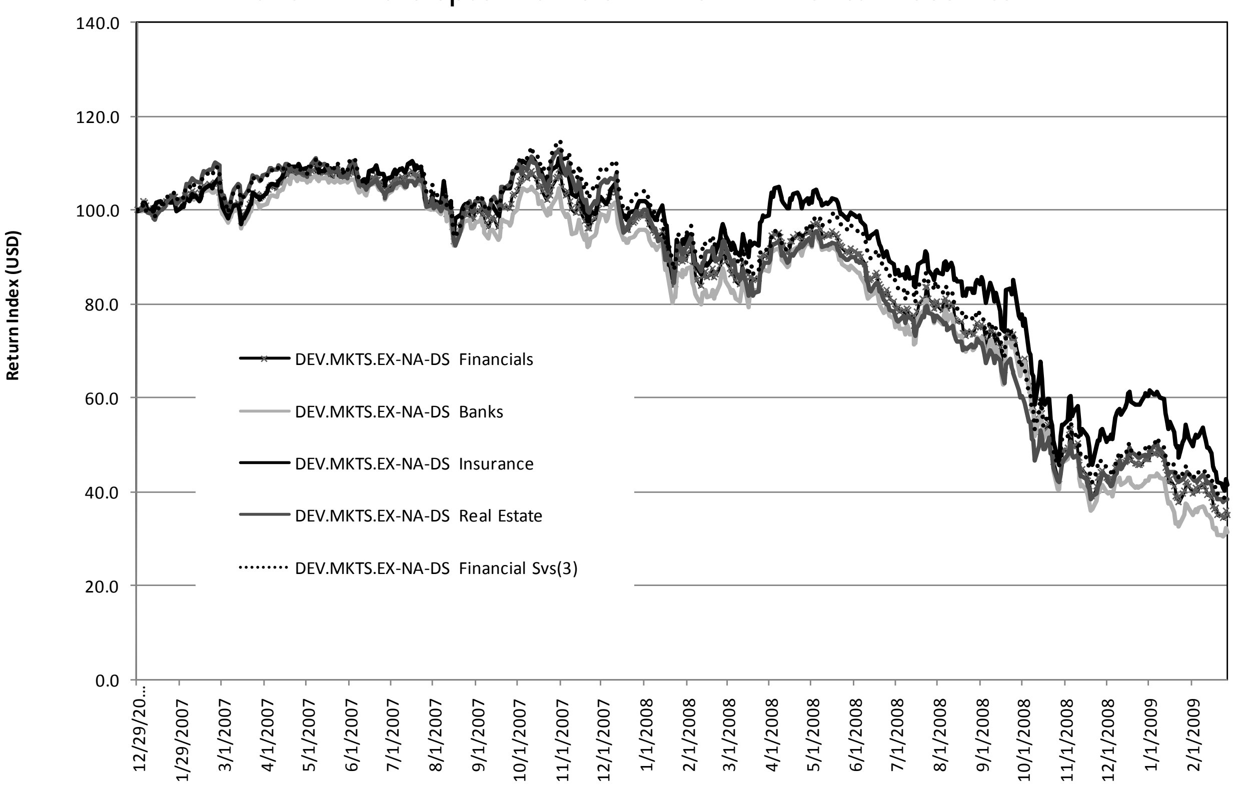
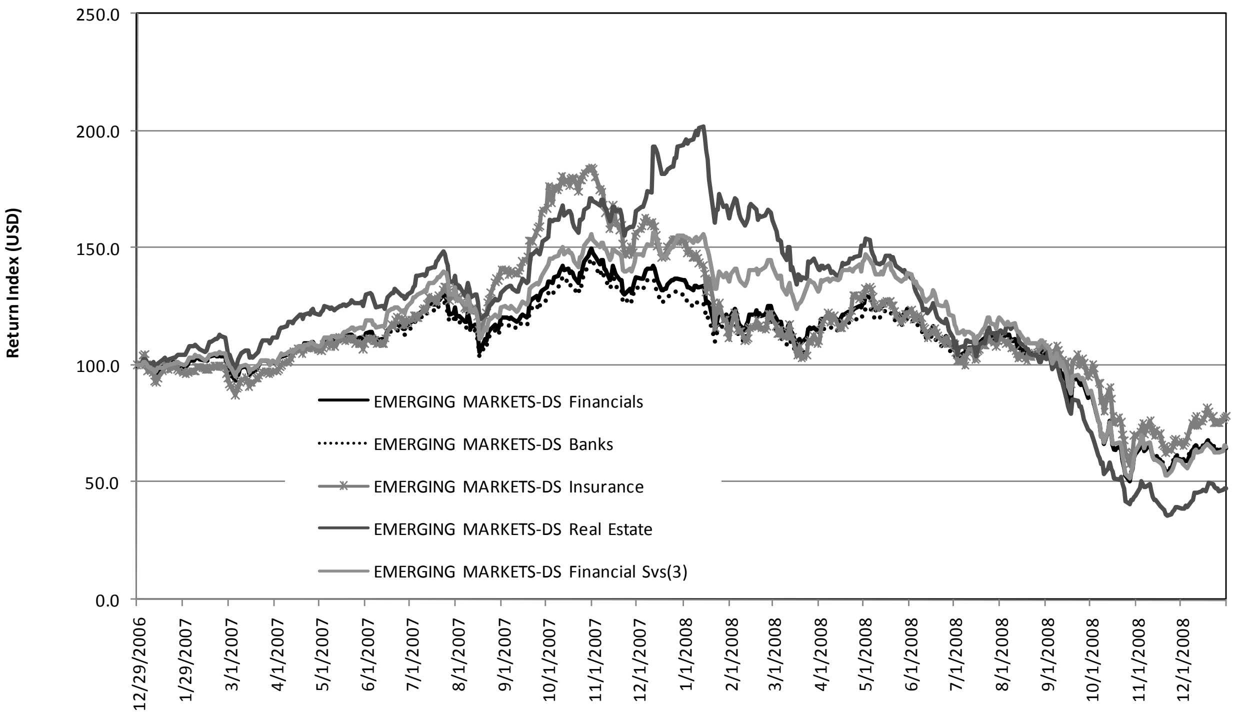


Figure 10 (con't)
Panel C: Emerging Markets Financials and Components



Panel D: Japanese Financials and Components

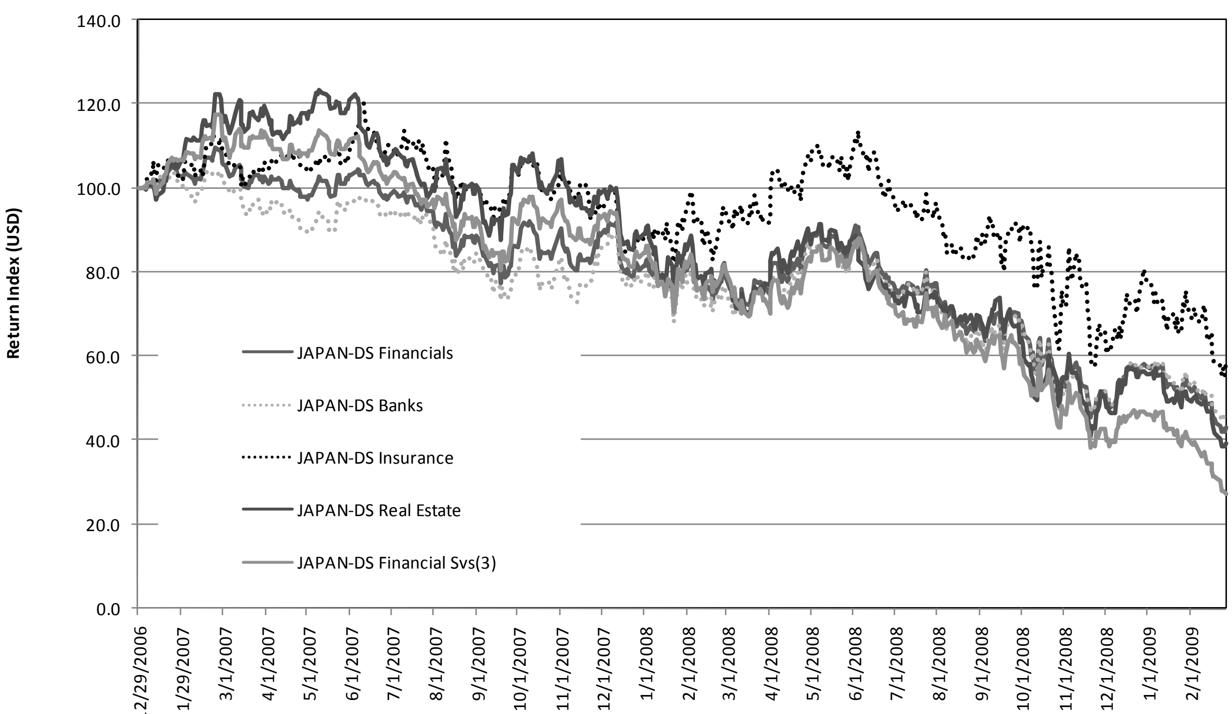
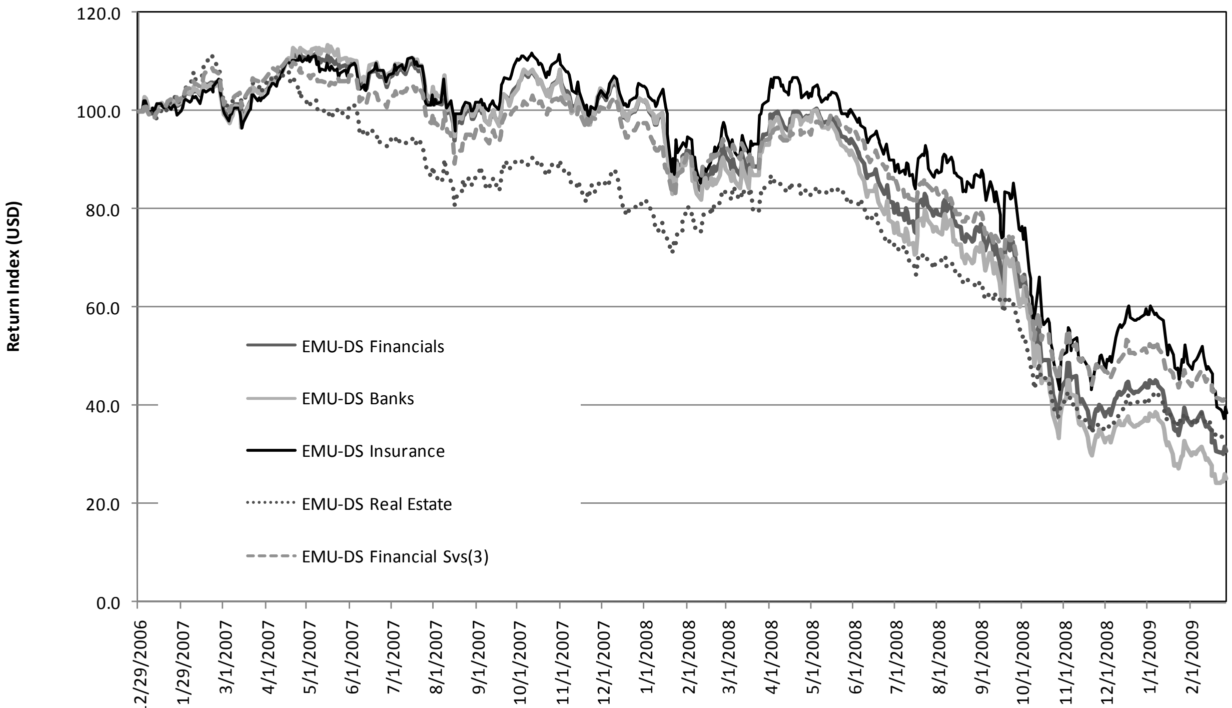


Figure 10 (con't)
Panel E: EMU Financials and Components



Panel F: UK Financials and Components

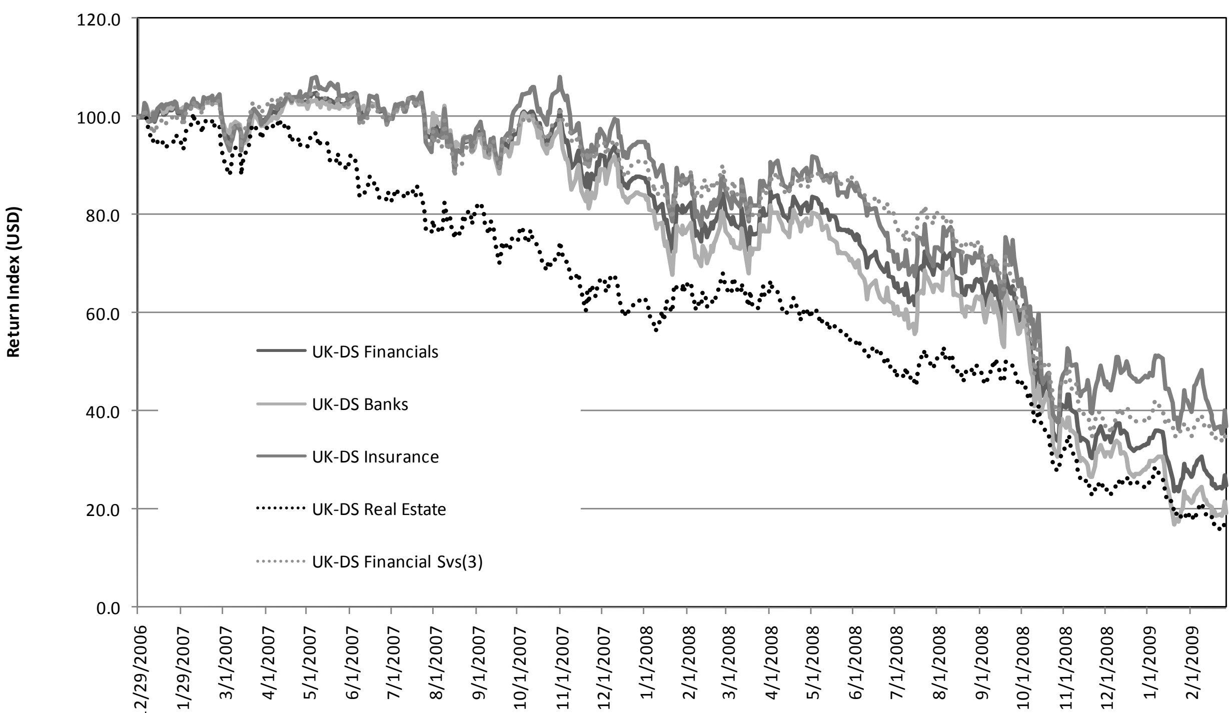
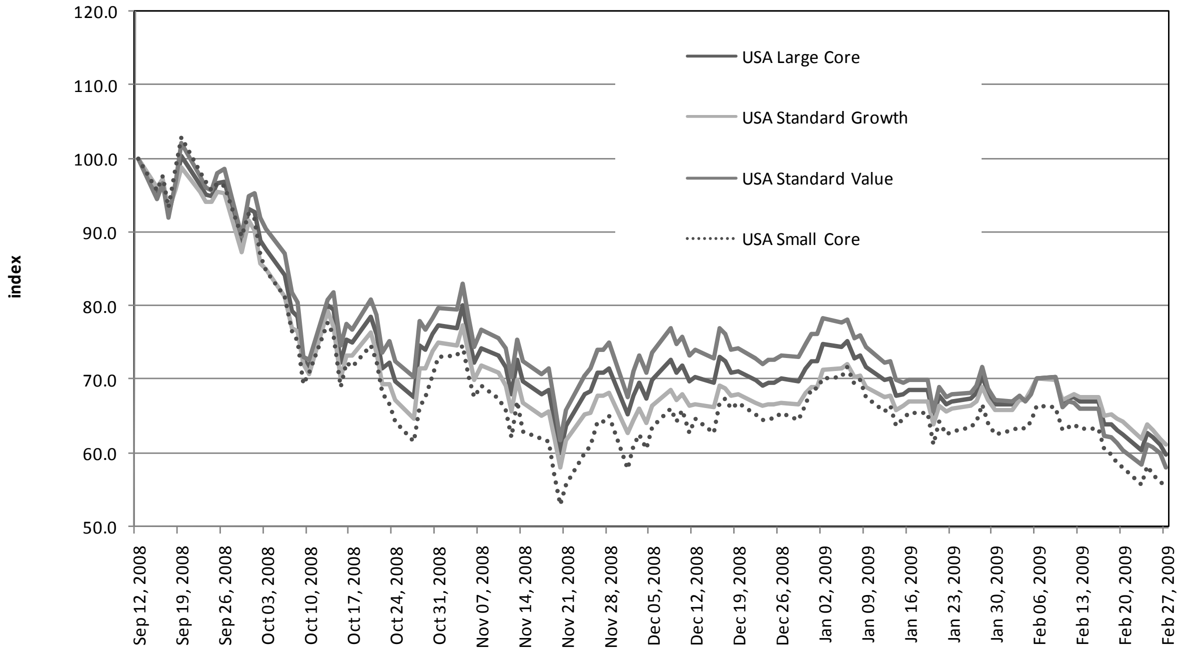


Figure 11: Performance of Style Portfolios

Panel A: MSCI USA - Standard Core, Standard Growth, Standard Value Small Core



Panel B: MSCI EAFE - Standard Core, Standard Growth, Standard Value Small Core

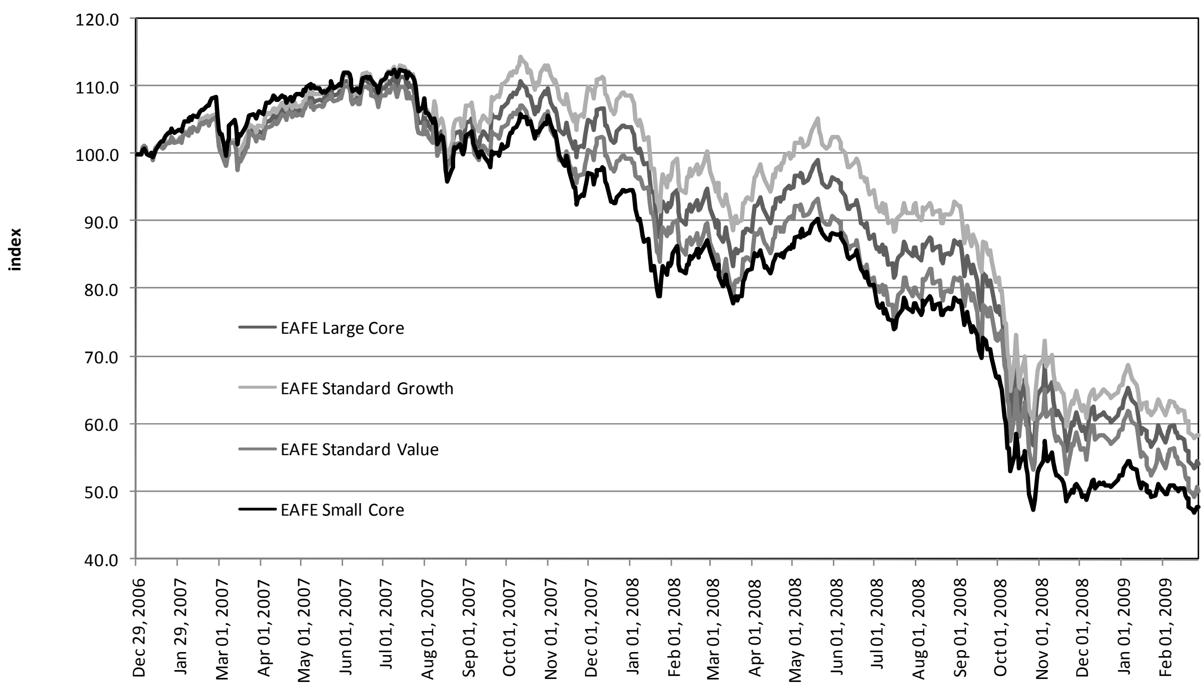


Figure 12: Market Volatility
Moving Average 30-Day Market Return Standard Deviation

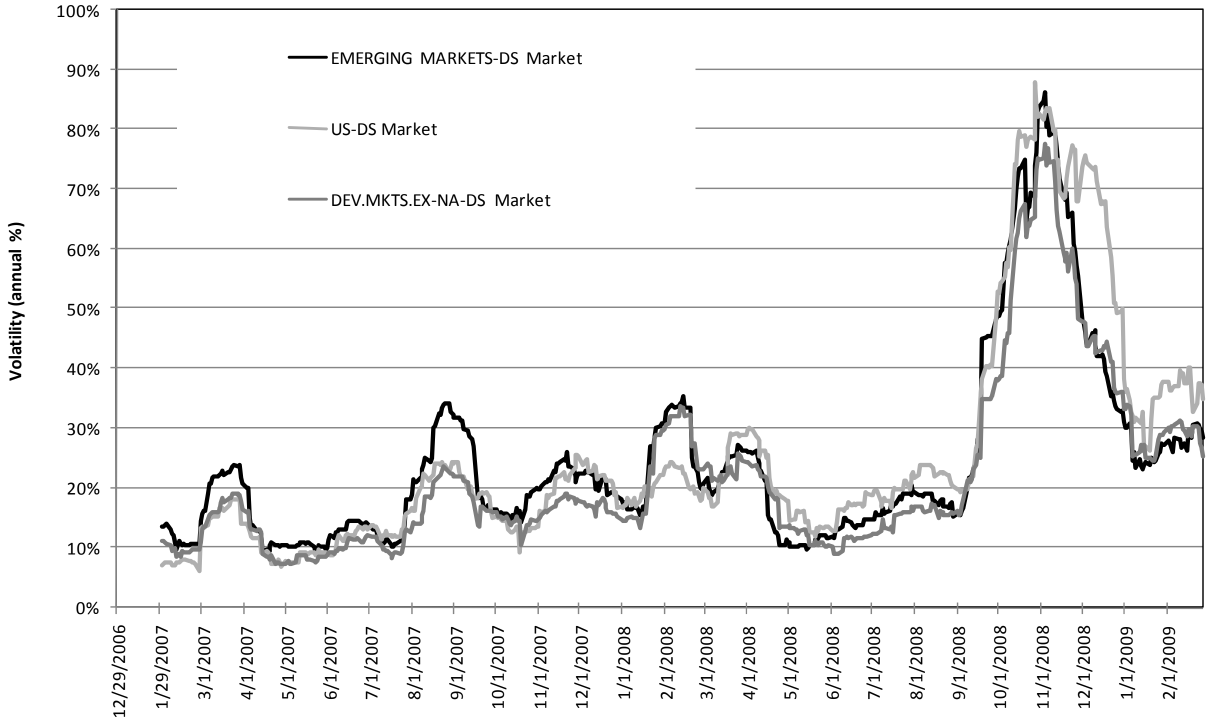


Figure 13: Implied Market Volatility
US and various European Markets

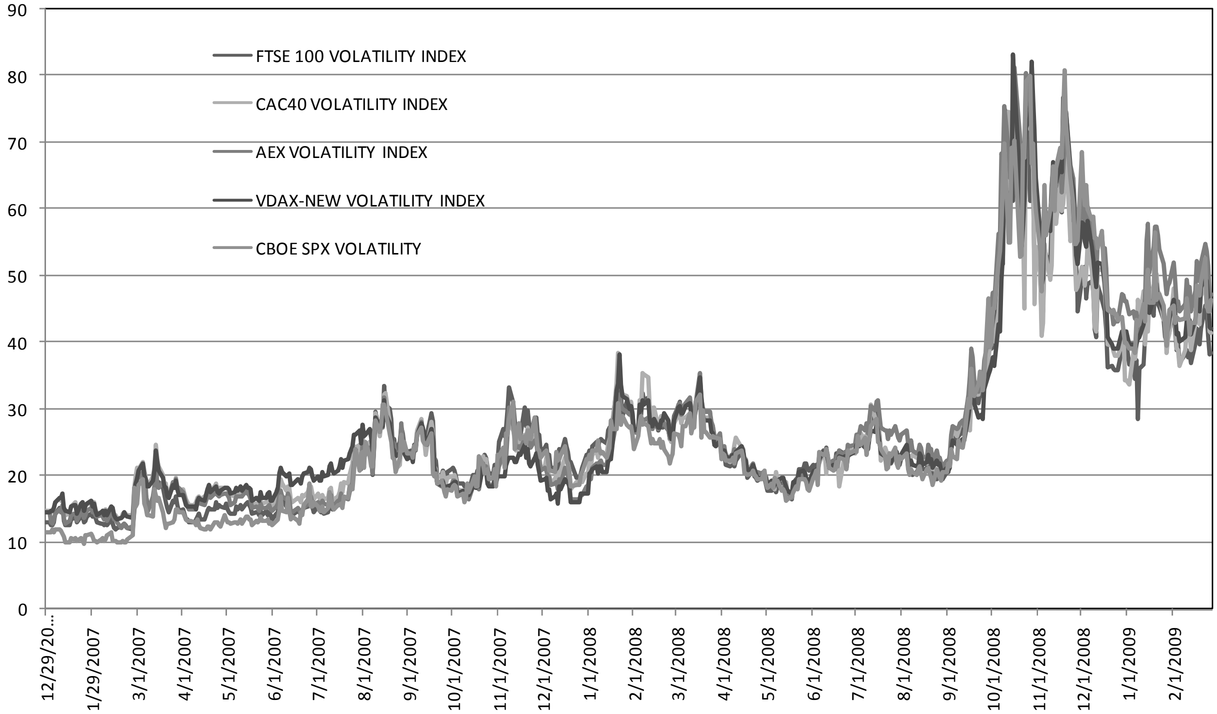


Table 1: DataStream Total World Market Portfolio statistics (USD)

USD Return Index	WORLD-DS Market
Return 1/1/07-2/27/09	-45.4%
Stdev (annualized)	24.2%
Return 12/31/06 -12/31/07	15.1%
Stdev (annualized)	13.0%
Return 12/31/07-12/31/08	-43.3%
Stdev (annualized)	31.2%
Return 9/12/08 – 10/27/09	-36.8%
Stdev (annualized)	58.0%
Return 12/31/08- 2/27/09	-16.5%
Stdev (annualized)	25.7%
Max daily return	8.5%
Date	10/13/08
Min daily return	-6.4%
Date	10/15/08

Period	Wealth Loss (USD($000))
From Peak to 2/27/09	-$29,148,950
9/15/08-10/27/08	-$14,013,020
1/1/09 -2/27/09	-$4,481,320

Table 2: Total Return Index Statistics for DataStream US, Developed Markets excluding North America, and Emerging Market Total Market Indices (USD)

USD Return Index	US Market	DEV.MKTS.EX-NA Market	EMERGING MARKETS Market
Return 12/31/06- 2/27/09	-44.3%	-47.5%	-41.8%
Stdev (annualized)	31.1%	26.0%	29.1%
Return 12/31/06-12/31/07	7.1%	12.3%	43.6%
Stdev (annualized)	15.6%	14.4%	18.7%
Return 12/31/07-12/31/08	-37.2%	-43.1%	-54.4%
Stdev (annualized)	40.4%	33.5%	36.6%
Return 9/12/08-10/27/08	-32.7%	-36.4%	-45.9%
Stdev (annualized)	72.5%	61.2%	69.0%
Return 12/31/08-2/27/09	-17.2%	-17.9%	-11.2%
Stdev (annualized)	36.1%	27.5%	28.2%
Max daily return	11.5%	7.5%	9.4%
Date	10/13/08	10/13/08	09/19/08
Min daily return	-9.0%	-7.8%	-9.4%
Date	10/15/08	10/10/08	10/06/08
Period		**Wealth Loss (USD (000))**	
From Peak to 2/27/09	-$9,209,840	-$13,940,470	-$5,146,304
9/15/08-10/27/08	-$4,446,839	-$6,263,370	-$2,660,009
1/1/09-2/27/09	-$1,659,703	-$2,294,590	-$425,726

Table 3: Statistics for all Declines in S&P500 Index of over 20% since 1926 (monthly data)

Date of Peak	Return to Trough	Months: Peak to Trough	Months: Peak back to Peak
September 2007	-54.1%	17*	???
August 1929	-83.4%	34	184
February 1937	-50.0%	13	85
September 1939	-30.3%	31	45
May 1946	-21.8%	11	41
December 1961	-22.3%	6	16
November 1968	-29.2%	19	28
December 1972	-42.6%	21	42
August 1987	-29.5%	3	21
August 2000	-30.5%	13	77

Table 4: Total Return Index Statistics for DataStream World Non-Financial Sector and World Financial Sector Indices (USD)

USD Return Index	**WORLD-DS Non-Financials**	**WORLD-DS Financials**
Return 12/31/06- 2/27/09	-38.3%	-63.9%
Stdev (annualized)	23.0%	30.4%
Return 12/31/06-12/31/07	20.8%	0.3%
Stdev (annualzied)	12.5%	15.4%
Return 12/31/07-12/31/08	-40.6%	-51.7%
Stdev (annualized)	29.8%	38.8%
Return 9/12/08-10/27/08	-35.7%	-40.5%
Stdev (annualized)	55.3%	71.1%
Return 12/31/08-2/27/09	-14.0%	-25.6%
Stdev (annualized)	23.4%	38.7%
Max daily return	8.7%	11.0%
Date	10/13/08	09/19/08
Min daily return	-6.6%	-7.9%
Date	10/15/08	09/29/08

Table 5: Financial and Non-Financial Total Return Index Statistics
DataStream Financial Sector and Non-financial Sectors of the US, Developed World ex North America, and Emerging Markets (USD)

Total Return Index (USD)	US-DS Financials	DEV.MKTS. EX-NA-DS Financials	EMERGING MARKETS-DS Financials	US-DS Non-Financials	DEV MKTS EX NA-DS Non-Financials	EMERGING MARKETS-DS Non-Financials
Return 12/31/06- 2/27/09	-71.1%	-65.0%	-46.6%	-35.9%	-39.8%	-40.1%
Stdev (annualized)	49.9%	32.1%	33.0%	28.8%	24.8%	28.3%
Return 12/31/06-12/31/07	-14.2%	-1.2%	36.4%	13.6%	18.2%	46.2%
Stdev (annualzied)	21.4%	16.6%	21.5%	14.7%	13.9%	18.0%
Return 12/31/07-12/31/08	-49.6%	-52.7%	-52.8%	-34.3%	-39.5%	-54.9%
Stdev (annualized)	63.0%	41.1%	41.3%	37.5%	31.9%	35.5%
Return 9/12/08-10/27/08	-34.2%	-41.7%	-47.7%	-32.3%	-34.5%	-45.3%
Stdev (annualized)	103.8%	75.5%	76.4%	69.1%	57.7%	67.0%
Return 12/31/08-2/27/09	-33.3%	-25.1%	-17.0%	-14.1%	-15.7%	-9.1%
Stdev (annualized)	76.6%	39.6%	32.6%	31.5%	25.1%	27.0%
Max daily return	14.4%	11.6%	11.1%	12.0%	7.5%	8.8%
Date	11/24/08	09/19/08	09/19/08	10/13/08	10/13/08	09/19/08
Min daily return	-15.0%	-9.3%	-8.7%	-9.0%	-7.3%	-9.6%
Date	12/01/08	10/10/08	10/06/08	10/15/08	10/10/08	10/06/08

Table 6a: Developed Market Gross Return Statistics (USD)
MCSIBarra UK, Europe ex UK, Japan, Pacific ex-Japan and USA Core Market Portfolios

Gross Return Index (USD)	UNITED KINGDOM	EUROPE ex UK	JAPAN	PACIFIC ex JAPAN	USA
Return 12/31/06- 2/27/09	-51.8%	-50.1%	-44.5%	-43.2%	-45.1%
Stdev (annualized)	35.5%	32.8%	31.2%	36.0%	31.5%
Return 12/31/06-12/31/07	8.4%	17.5%	-4.1%	31.7%	6.0%
Stdev (annualzied)	19.2%	17.0%	18.2%	23.1%	15.9%
Return 12/31/07-12/31/08	-48.3%	-45.0%	-29.1%	-50.0%	-37.1%
Stdev (annualized)	45.7%	42.2%	39.6%	45.6%	40.9%
Return 9/12/08-10/27/08	-38.3%	-38.7%	-27.6%	-41.3%	-32.4%
Stdev (annualized)	83.1%	72.2%	66.8%	84.3%	73.7%
Return 12/31/08-2/27/09	-13.9%	-22.7%	-18.3%	-13.7%	-17.6%
Stdev (annualized)	40.8%	38.9%	34.5%	32.6%	36.5%
Max daily return	13.0%	11.1%	12.2%	8.7%	11.7%
Date	10/29/08	11/24/08	10/14/08	10/13/08	10/13/08
Min daily return	-9.9%	-9.6%	-9.1%	-12.3%	-9.1%
Date	10/10/08	10/06/08	10/16/08	10/10/08	10/15/08

Table 6b: Developed Market Gross Return Statistics (Local Currency)
MCSIBarra UK, Europe ex UK, Japan, Pacific ex-Japan and USA Core Market Portfolios

Gross Return Index (Local Currency)	UNITED KINGDOM	EUROPE ex UK	JAPAN	PACIFIC ex JAPAN	USA
Return 12/31/06- 2/27/09	-33.8%	-48.3%	-54.4%	-34.6%	-45.1%
Stdev (annualized)	29.1%	28.1%	33.4%	26.4%	31.5%
Return 12/31/06-12/31/07	6.6%	6.6%	-10.1%	21.6%	6.0%
Stdev (annualzied)	17.3%	15.4%	19.5%	17.6%	15.9%
Return 12/31/07-12/31/08	-28.5%	-42.7%	-42.5%	-41.6%	-37.1%
Stdev (annualized)	37.4%	36.5%	43.2%	33.4%	40.9%
Return 9/12/08-10/27/08	-28.8%	-31.2%	-37.0%	-28.1%	-32.4%
Stdev (annualized)	69.6%	66.2%	77.6%	54.7%	73.7%
Return 12/31/08-2/27/09	-13.1%	-15.3%	-11.9%	-7.8%	-17.6%
Stdev (annualized)	28.1%	28.9%	31.4%	21.7%	36.5%
Max daily return	9.7%	10.4%	14.0%	6.5%	11.7%
Date	11/14/08	10/13/08	10/14/08	10/13/08	10/13/08
Min daily return	-8.8%	-7.6%	-9.9%	-8.0%	-9.1%
Date	10/10/08	10/06/08	10/16/08	10/10/08	10/15/08

Table 7a: Emerging Markets Gross Return Statistics (USD)
MCSIBarra BRIC (Brazil, Russia, India and China). Emerging Markets (EM) Asia , EM Europe Middle East & Africa (EMEA), EM Latin America (LAM) and USA Markets

Gross Return in USD	BRIC	EM ASIA	EM EMEA	EM LAM	USA
Return 12/31/06- 2/27/09	-40.3%	-41.4%	-51.9%	-30.6%	-45.1%
Stdev (annualized)	40.1%	34.1%	37.4%	47.0%	31.5%
Return 12/31/06-12/31/07	59.1%	41.6%	28.7%	50.7%	6.0%
Stdev (annualzied)	24.4%	23.1%	21.0%	29.4%	15.9%
Return 12/31/07-12/31/08	-59.3%	-52.8%	-55.6%	-51.3%	-37.1%
Stdev (annualized)	51.1%	42.0%	48.2%	59.4%	40.9%
Return 9/12/08-10/27/08	-51.5%	-42.6%	-49.8%	-52.5%	-32.4%
Stdev (annualized)	100.2%	66.6%	87.3%	115.7%	73.7%
Return 12/31/08-2/27/09	-7.6%	-12.3%	-15.8%	-5.4%	-17.6%
Stdev (annualized)	38.5%	33.9%	38.4%	47.5%	36.5%
Max daily return	14.5%	13.5%	13.7%	16.6%	11.7%
Date	09/19/08	10/30/08	09/19/08	10/13/08	10/13/08
Min daily return	-11.2%	-8.3%	-14.3%	-14.0%	-9.1%
Date	10/06/08	10/16/08	10/06/08	10/15/08	10/15/08

Table 7b: Emerging Markets Gross Return Statistics (Local Currency)
MCSIBarra BRIC (Brazil, Russia, India and China). Emerging Markets (EM) Asia , EM Europe Middle East & Africa (EMEA), EM Latin America (LAM) and USA Markets

Gross Return in Local Currency	BRIC	EM ASIA	EM EMEA	EM LAM	USA
Return 12/31/06- 2/27/09	-35.8%	-30.6%	-42.6%	-17.6%	-45.1%
Stdev (annualized)	35.4%	30.1%	30.2%	36.2%	31.5%
Return 12/31/06-12/31/07	48.0%	39.1%	21.8%	35.6%	6.0%
Stdev (annualzied)	21.7%	21.6%	16.9%	23.3%	15.9%
Return 12/31/07-12/31/08	-53.9%	-47.1%	-48.6%	-37.7%	-37.1%
Stdev (annualized)	45.2%	36.5%	39.2%	45.6%	40.9%
Return 9/12/08-10/27/08	-46.8%	-37.1%	-40.9%	-40.5%	-32.4%
Stdev (annualized)	87.7%	57.1%	73.6%	85.5%	73.7%
Return 12/31/08-2/27/09	-5.9%	-5.7%	-8.4%	-2.5%	-17.6%
Stdev (annualized)	32.9%	29.9%	28.6%	35.6%	36.5%
Max daily return	13.0%	9.3%	12.2%	12.8%	11.7%
Date	09/19/08	10/30/08	09/19/08	10/13/08	10/13/08
Min daily return	-9.7%	-7.6%	-11.8%	-10.6%	-9.1%
Date	10/24/08	10/24/08	10/06/08	10/15/08	10/15/08

Table 8a: US Industry Total Return Index Statistics (USD)
DataStream Major (Level 3) Industry Portfolios for the US Market

Total return Index (USD)	US-DS Oil & Gas	US-DS Basic Mats	US-DS Industrials	US-DS Consumer Gds	US-DS Health Care	US-DS Consumer Svs	US-DS Telecom	US-DS Utilities	US-DS Financials	US-DS Technology
Return 12/31/06- 2/27/09	-25.5%	-40.4%	-48.3%	-29.4%	-26.6%	-42.4%	-35.7%	-28.5%	-71.1%	-37.6%
Stdev (annualized)	43.8%	46.0%	31.3%	22.9%	23.4%	29.4%	33.5%	29.5%	49.8%	32.6%
Return 12/31/06-12/31/07	34.1%	38.9%	14.3%	10.6%	7.0%	-4.1%	10.4%	19.0%	-14.2%	17.6%
Stdev (annualzied)	22.2%	23.1%	16.1%	12.2%	11.8%	15.0%	17.0%	17.4%	21.4%	18.2%
Return 12/31/07-12/31/08	-35.9%	-50.6%	-39.7%	-25.4%	-21.6%	-29.9%	-33.1%	-30.5%	-49.6%	-43.1%
Stdev (annualized)	57.8%	60.0%	40.1%	29.7%	30.6%	38.4%	44.1%	38.3%	63.0%	41.1%
Return 9/12/08-10/27/08	-35.6%	-49.4%	-37.4%	-27.1%	-23.5%	-35.2%	-28.0%	-27.6%	-34.2%	-31.4%
Stdev (annualized)	113.9%	101.0%	62.9%	53.4%	59.3%	61.4%	77.3%	75.6%	103.7%	70.7%
Return 12/31/08-2/27/09	-13.4%	-13.0%	-25.0%	-14.4%	-12.6%	-14.3%	-13.0%	-13.5%	-33.3%	-6.7%
Stdev (annualized)	43.4%	51.9%	38.6%	24.6%	26.0%	32.7%	35.0%	25.7%	76.6%	41.2%
Max daily return	18.9%	15.6%	9.7%	9.5%	12.1%	11.6%	14.2%	14.3%	14.4%	12.3%
Date	10/13/08	10/13/08	10/28/08	10/13/08	10/13/08	10/28/08	10/13/08	10/13/08	11/24/08	10/14/08
Min daily return	-15.3%	-13.4%	-9.1%	-7.2%	-6.8%	-9.0%	-8.4%	-8.3%	-15.0%	-9.4%
Date	10/15/08	10/15/08	10/15/08	10/9/08	10/9/08	10/15/08	10/15/08	10/15/08	12/1/08	9/29/08

Table 8b: Developed Markets ex NA Industry Total Return Index Statistics (USD)
DataStream Major (Level 3) Industry Portfolios for the Developed Markets ex North America Market

Total Return Index (USD)	Dev Mkts xNA-DS Oil & Gas	Dev Mkts xNA -DS Basic Mats	Dev Mkts xNA -DS Industrials	Dev Mkts xNA -DS Cons Gds	Dev Mkts xNA -DS Health Care	Dev Mkts xNA -DS Cons Svs	Dev Mkts xNA -DS Telecom	Dev Mkts xNA -DS Utilities	Dev Mkts xNA -DS Financials	Dev Mkts xNA DS Technology
Return 12/31/06- 2/27/09	-33.1%	-47.2%	-49.3%	-39.0%	-31.9%	-43.3%	-21.4%	-29.1%	-64.9%	-53.8%
Stdev (annualized)	37.9%	38.4%	28.6%	22.9%	20.4%	21.3%	24.9%	26.3%	32.1%	27.4%
Return 12/31/06-12/31/07	26.3%	32.4%	15.4%	16.4%	1.1%	6.6%	36.3%	30.8%	-1.1%	0.8%
Stdev (annualzied)	19.3%	21.5%	16.4%	12.3%	11.4%	12.9%	16.5%	12.8%	16.6%	14.9%
Return 12/31/07-12/31/08	-40.5%	-53.6%	-46.5%	-39.5%	-17.9%	-37.1%	-32.2%	-32.2%	-52.7%	-44.7%
Stdev (annualized)	50.1%	49.6%	36.3%	29.2%	26.6%	27.0%	31.1%	35.2%	41.1%	34.9%
Return 9/12/08-10/27/08	-39.2%	-50.7%	-42.2%	-29.5%	-21.1%	-29.9%	-27.0%	-28.7%	-41.7%	-37.2%
Stdev (annualized)	87.3%	85.2%	61.5%	44.1%	50.6%	47.4%	60.3%	67.5%	75.5%	58.1%
Return 12/31/08-2/27/09	-10.9%	-14.1%	-17.9%	-13.5%	-18.0%	-15.5%	-15.1%	-20.1%	-25.1%	-17.1%
Stdev (annualized)	37.2%	40.1%	31.9%	27.2%	18.4%	21.8%	23.8%	22.8%	39.6%	32.4%
Max daily return	14.3%	11.8%	8.40%	13.38%	7.19%	5.81%	8.68%	12.30%	11.61%	7.14%
Date	10/29/08	10/29/08	10/29/08	10/28/08	10/13/08	10/29/08	10/13/08	10/13/08	09/19/08	10/29/08
Min daily return	-10.5%	-10.4%	-8.05%	-5.80%	-7.86%	-7.54%	-8.62%	-8.55%	-9.31%	-8.27%
Date	10/6/08	10/6/08	10/16/08	10/22/08	10/10/08	10/10/08	10/10/08	10/10/08	10/10/08	11/6/08

Table 8c: Emerging Markets Industry Total Return Index Statistics (USD)
DataStream Major (Level 3) Industry Portfolios for the Emerging Markets

Total retrun Index (USD)	EM Oil & Gas	EM Basic Mats	EM Industrials	EM Cons Gds	EM Health Care	EM Cons Svs	EM Telecom	EM Utilities	EM Financials	EM Technology
Return 12/31/06- 2/27/09	-46.2%	-31.8%	-46.7%	-31.2%	-15.9%	-47.5%	-28.4%	-30.9%	-46.5%	-53.6%
Stdev (annualized)	37.6%	35.2%	31.6%	24.2%	19.0%	24.4%	23.8%	25.6%	33.0%	33.5%
Return 12/31/06-12/31/07	39.9%	95.4%	61.5%	53.2%	23.7%	19.6%	38.9%	42.7%	36.4%	1.6%
Stdev (annualzied)	20.0%	23.1%	22.0%	18.8%	15.1%	17.5%	17.2%	16.6%	21.5%	22.0%
Return 12/31/07-12/31/08	-59.2%	-62.4%	-61.4%	-49.9%	-29.2%	-46.5%	-41.0%	-47.9%	-52.8%	-52.2%
Stdev (annualized)	49.4%	43.5%	38.7%	28.7%	22.4%	29.7%	28.8%	32.3%	41.3%	41.3%
Return 9/12/08-10/27/08	-52.1%	-54.3%	-47.9%	-37.3%	-26.0%	-40.2%	-35.9%	-37.8%	-47.7%	-38.6%
Stdev (annualized)	97.9%	74.7%	68.0%	54.0%	35.9%	55.3%	54.2%	63.2%	76.3%	61.4%
Return 12/31/08-2/27/09	-5.6%	-7.1%	-14.4%	-10.2%	-4.0%	-18.0%	-12.6%	-7.2%	-17.0%	-4.4%
Stdev (annualized)	35.3%	36.5%	29.6%	20.8%	16.5%	22.6%	22.6%	22.2%	32.6%	38.5%
Max daily return	16.2%	8.3%	9.8%	6.2%	4.1%	6.8%	6.9%	8.8%	11.1%	12.9%
Date	9/19/08	9/19/08	10/30/08	10/20/08	10/14/08	10/13/08	10/13/08	10/13/08	09/19/08	10/30/08
Min daily return	-13.3%	-11.9%	-9.4%	-7.1%	-5.4%	-8.7%	-7.2%	-8.0%	-8.7%	-8.4%
Date	10/6/08	10/6/08	10/16/08	10/8/08	10/24/08	10/6/08	10/22/08	10/6/08	10/6/08	10/16/08

Table 8d: Japan Industry Total Return Index Statistics (USD)
DataStream Major (Level 3) Industry Portfolios for Japan

Total Return index (USD)	Japan-DS Oil & Gas	Japan-DS Basic Mats	Japan-DS Industrials	Japan DS Cons Gds	Japan DS Health Care	Japan-DS Cons Svs	Japan-DS Telecom	Japan-DS Utilities	Japan-DS Financials	Japan-DS Technology
Return 12/31/06- 2/27/09	-22.5%	-49.7%	-45.2%	-43.9%	-27.1%	-26.8%	-9.0%	-5.8%	-56.8%	-51.9%
Stdev (annualized)	41.4%	36.9%	36.0%	31.7%	27.1%	22.0%	29.6%	27.4%	39.6%	32.7%
Return 12/31/06-12/31/07	16.1%	0.2%	4.6%	0.8%	-8.4%	-5.4%	5.9%	-10.4%	-18.4%	-13.2%
Stdev (annualized)	25.4%	23.0%	22.0%	17.7%	16.1%	14.0%	20.1%	21.6%	24.6%	18.3%
Return 12/31/07-12/31/08	-28.1%	-39.8%	-36.5%	-38.2%	-0.7%	-1.3%	6.6%	22.7%	-29.4%	-31.5%
Stdev (annualized)	52.2%	46.5%	45.2%	40.4%	34.3%	26.9%	36.3%	31.3%	49.9%	41.2%
Return 9/12/08-10/27/08	-36.5%	-36.6%	-35.1%	-32.0%	-19.3%	-10.8%	-8.3%	4.7%	-27.9%	-33.4%
Stdev (annualized)	82.3%	76.6%	72.3%	63.9%	63.6%	48.0%	57.1%	59.0%	79.4%	67.1%
Return 12/31/08-2/27/09	-7.1%	-16.5%	-17.5%	-9.9%	-19.8%	-21.6%	-19.4%	-14.3%	-25.0%	-19.1%
Stdev (annualized)	46.2%	39.5%	40.7%	37.0%	29.7%	27.0%	31.8%	33.3%	42.3%	41.8%
Max daily return	11.5%	15.2%	13.3%	10.9%	8.3%	8.8%	7.2%	8.0%	13.3%	11.6%
Date	10/14/08	10/14/08	10/14/08	10/14/08	10/14/08	10/14/08	10/17/08	10/14/08	10/14/08	10/14/08
Min daily return	-12.3%	-10.0%	-11.4%	-8.1%	-9.6%	-6.5%	-10.3%	-8.5%	-11.2%	-9.8%
Date	10/16/08	10/16/08	10/16/08	10/16/08	10/10/08	10/10/08	10/10/08	10/10/08	10/27/08	10/16/08

Table 8e European Monetary Union Industry Total Return Index Statistics (USD)

DataStream Major (Level 3) Industry Portfolios for the EMU

Total Return Index (USD)	EMU Oil & Gas	EMU Basic Mats	EMU Industrials	EMU Cons Gds	EMU Health Care	EMU Cons Svs	EMU Telecom	EMU Utilities	EMU Financials	EMU Technology
Return 12/31/06- 2/27/09	-37.1%	-45.1%	-53.2%	-40.4%	-34.4%	-46.3%	-19.6%	-35.9%	-69.1%	-54.8%
Stdev (annualized)	38.3%	39.9%	34.0%	35.7%	25.4%	27.2%	29.8%	33.4%	36.7%	35.1%
Return 12/31/06-12/31/07	22.0%	36.2%	17.9%	29.0%	10.2%	10.6%	31.9%	41.7%	1.8%	21.7%
Stdev (annualized)	18.8%	21.3%	19.2%	16.1%	13.7%	14.6%	16.6%	14.6%	18.1%	19.5%
Return 12/31/07-12/31/08	-39.6%	-49.5%	-49.2%	-41.9%	-31.4%	-41.6%	-28.0%	-39.3%	-57.0%	-52.0%
Stdev (annualized)	50.5%	51.1%	42.8%	46.9%	33.1%	35.0%	38.3%	44.8%	46.2%	45.0%
Return 9/12/08-10/27/08	-38.6%	-51.8%	-44.7%	-26.9%	-28.5%	-35.1%	-28.0%	-34.6%	-46.3%	-38.1%
Stdev (annualized)	83.5%	83.3%	69.3%	63.2%	57.3%	56.0%	71.0%	83.2%	80.1%	71.7%
Return 12/31/08-2/27/09	-14.7%	-20.1%	-21.7%	-20.4%	-13.2%	-16.9%	-15.3%	-25.5%	-29.5%	-22.6%
Stdev (annualized)	40.1%	47.2%	41.6%	41.3%	25.4%	31.0%	32.9%	31.7%	52.2%	39.2%
Max daily return	15.7%	13.1%	11.0%	28.8%	10.9%	8.8%	12.4%	16.0%	12.1%	10.9%
Date	10/29/08	10/29/08	10/13/08	10/28/08	11/24/08	10/13/08	10/29/08	10/13/08	09/19/08	11/24/08
Min daily return	-10.9%	-10.6%	-9.5%	-12.8%	-8.6%	-8.8%	-10.1%	-9.3%	-10.0%	-12.1%
Date	10/6/08	10/6/08	10/6/08	10/29/08	10/10/08	10/6/08	10/10/08	10/6/08	10/6/08	10/6/08

Table 8f: UK Industry Total Return Index Statistics (USD)
DataStream Major (Level 3) Industry Portfolios for UK

Total return Index (USD)	UK Oil & Gas	UK Basic Mats	UK Industrials	UK Cons Gds	UK Health Care	UK Cons Svs	UK Telecom	UK Utilities	UK Financials	UK Technology
Return 12/31/06- 2/27/09	-30.0%	-56.0%	-52.4%	-33.5%	-36.8%	-54.8%	-39.1%	-33.9%	-75.3%	-48.3%
Stdev (annualized)	41.1%	64.7%	31.7%	28.9%	29.4%	33.4%	39.5%	30.8%	45.5%	34.1%
Return 12/31/06-12/31/07	25.5%	52.6%	1.7%	17.3%	-4.0%	-1.7%	29.3%	12.3%	-12.4%	-4.5%
Stdev (annualzied)	20.4%	38.1%	20.3%	16.7%	17.7%	19.4%	25.1%	18.0%	23.0%	20.8%
Return 12/31/07-12/31/08	-37.6%	-69.1%	-48.3%	-38.9%	-21.1%	-51.6%	-46.3%	-37.7%	-62.1%	-48.8%
Stdev (annualized)	54.2%	81.3%	39.5%	37.1%	37.3%	42.3%	49.0%	39.3%	54.7%	42.7%
Return 9/12/08-10/27/08	-32.9%	-59.7%	-42.9%	-29.4%	-19.6%	-36.2%	-34.5%	-25.9%	-48.0%	-42.2%
Stdev (annualized)	5.9%	8.2%	4.0%	4.3%	4.0%	4.1%	5.1%	4.4%	6.0%	4.4%
Return 12/31/08-2/27/09	-10.6%	-6.7%	-9.5%	-7.2%	-16.6%	-5.0%	-12.3%	-5.5%	-25.7%	5.8%
Stdev (annualized)	42.2%	77.7%	36.0%	30.8%	31.9%	38.6%	45.8%	33.5%	77.2%	39.9%
Max daily return	15.9%	22.8%	8.8%	11.2%	10.4%	9.8%	12.6%	13.9%	17.7%	11.0%
Date	10/29/08	11/24/08	12/08/08	11/14/08	10/13/08	10/29/08	10/29/08	10/13/08	09/24/08	10/29/08
Min daily return	-10.6%	-17.7%	-8.3%	-8.8%	-8.7%	-8.2%	-11.0%	-10.0%	-12.1%	-8.4%
Date	10/6/08	10/15/08	10/6/08	10/16/08	10/10/08	10/10/08	7/22/08	12/1/08	10/24/08	10/6/08

Table 9a: US Finance Industry Total Return Index Statistics (USD)
DataStream Financial Industry and Components for the US Market

Total return index USD	**US-DS Financials**	**US-DS Banks**	**US-DS Insurance**	**US-DS Real Estate**	**US-DS Financial Svs(3)**
Return 12/31/06- 2/27/09	-71.1%	-77.4%	-61.6%	-66.1%	-71.0%
Stdev (annualized)	49.8%	63.3%	37.5%	58.1%	54.7%
Return 12/31/06-12/31/07	-14.2%	-23.5%	0.1%	-15.8%	-14.5%
Stdev (annualzied)	21.4%	23.6%	15.8%	25.8%	25.5%
Return 12/31/07-12/31/08	-49.6%	-44.6%	-46.0%	-40.3%	-59.4%
Stdev (annualized)	63.0%	77.5%	48.1%	74.9%	70.0%
Return 9/12/08-10/27/08	-34.2%	-25.5%	-33.2%	-46.5%	-42.0%
Stdev (annualized)	103.7%	128.5%	84.7%	104.5%	116.7%
Return 12/31/08-2/27/09	-33.3%	-46.8%	-29.0%	-32.6%	-16.4%
Stdev (annualized)	76.6%	114.3%	53.7%	79.4%	76.4%
Max daily return	14.4%	19.4%	12.1%	18.6%	16.7%
Date	11/24/08	11/24/08	10/13/08	10/28/08	11/24/08
Min daily return	-15.0%	-17.6%	-10.5%	-18.3%	-15.8%
Date	12/1/08	12/1/08	11/19/08	12/1/08	12/1/08

Table 9b: Developed Markets ex NA Finance Industry Total Return Index Statistics (USD)
DataStream Financial Industry and Components for the Developed Markets ex North America Market

Total return index USD	**Dev Mkts xNA-DS Financials**	**Dev Mkts xNA-DS Banks**	**Dev Mkts xNA DS-Insurance**	**Dev Mkts xNA-DS Real Estate**	**Dev Mkts xNA-DS Financial Svs(3)**
Return 12/31/06- 2/27/09	-64.9%	-68.5%	-58.5%	-61.6%	-61.7%
Stdev (annualized)	32.1%	34.8%	36.3%	28.7%	28.9%
Return 12/31/06-12/31/07	-1.1%	-4.2%	1.9%	-0.1%	3.9%
Stdev (annualized)	16.6%	17.1%	17.3%	19.5%	17.7%
Return 12/31/07-12/31/08	-52.7%	-55.9%	-40.7%	-52.5%	-53.0%
Stdev (annualized)	41.1%	44.3%	46.4%	35.5%	36.5%
Return 9/12/08-10/27/08	-41.7%	-42.7%	-43.1%	-38.3%	-39.5%
Stdev (annualized)	75.5%	81.7%	82.7%	60.9%	64.9%
Return 12/31/08-2/27/09	-25.1%	-25.4%	-31.4%	-19.1%	-21.4%
Stdev (annualized)	39.6%	46.6%	48.6%	28.4%	29.8%
Max daily return	11.6%	13.9%	12.8%	7.1%	7.7%
Date	9/19/08	10/29/08	10/29/08	10/29/08	09/19/08
Min daily return	-9.3%	-9.9%	-9.5%	-8.3%	-7.9%
Date	10/10/08	10/10/08	10/10/08	10/10/08	10/6/08

Table 9c: Emerging Markets Finance Industry Total Return Index Statistics (USD)
DataStream Financial Industry and Components for the Emerging Markets

Total return Index USD	**EMERGING MARKETS-DS Financials**	**EMERGING MARKETS-DS Banks**	**EMERGING MARKETS-DS Insurance**	**EMERGING MARKETS-DS Real Estate**	**EMERGING MARKETS-DS Financial Svs(3)**
Return 12/31/06- 2/27/09	-46.5%	-46.4%	-31.3%	-63.5%	-45.3%
Stdev (annualized)	33.0%	33.7%	40.7%	35.5%	32.4%
Return 12/31/06-12/31/07	36.4%	30.1%	53.1%	94.1%	55.3%
Stdev (annualized)	21.5%	21.7%	28.7%	25.6%	21.7%
Return 12/31/07-12/31/08	-52.8%	-50.2%	-48.8%	-75.5%	-57.8%
Stdev (annualized)	41.3%	42.3%	50.0%	43.0%	40.0%
Return 9/12/08-10/27/08	-47.7%	-47.2%	-43.7%	-56.5%	-48.8%
Stdev (annualized)	76.3%	79.8%	80.0%	64.4%	68.4%
Return 12/31/08-2/27/09	-17.0%	-17.3%	-12.4%	-23.0%	-16.4%
Stdev (annualized)	32.6%	33.6%	38.3%	29.0%	32.1%
Max daily return	11.1%	12.0%	11.1%	11.1%	8.5%
Date	9/19/08	9/19/08	10/30/08	12/11/07	09/19/08
Min daily return	-8.7%	-8.9%	-8.9%	-12.3%	-9.1%
Date	10/6/08	10/6/08	10/6/08	10/24/0808	10/6/08

Table 10: Cross country/Regional Average Correlations

MSCI data using US, UK, Europe ex UK, Japan and Pacific ex-Japan as Developed Market and the three EM regions, EM Asia, EM Latin America and EM EMEA as the Emerging Markets

	Developed Market	% chg	Emerging Markets	% chg	Cross-market	% chg
Pre-Crisis Period 1/1/07 - 9/12/08	0.425		0.585		0.506	
Crisis Period 9/15/08 - 10/27/08	0.597	41%	0.793	36%	0.685	35%
Post Crisis Period 10/28/08 - 2/27/09	0.437	2.9%	0.681	16.4%	0.569	12.4%

Table notes: The numbers are the simple average of the correlations in each group or across each group Developed markets is an average amongst the 5 Developed Markets listed above for the period defined. The Emerging Markets is the average correlation amongst the three EM regions listed above for the defined period. The cross market value is the average correlation between the 5 Developed Markets and the 3 EM markets listed above for the defined period. The % chg is the % increase in correlation relative to the pre-crisis period. All correlations are done using daily change in the gross return index measured in USD.

Table 11: Within Industry correlations across US, Developed Markets ex NA, and Emerging Market Industry Portfolios

	Pre Crisis	Crisis Period	Post Crisis	% increase	
	1/01/07 - 9/12/08	9/15/08 - 10/27/08	10/28/08 -2/29/09	Crisis	Post Crisis
Oil & Gas	0.528	0.600	0.615	13.6%	16.4%
Basic Mats	0.608	0.647	0.673	6.5%	10.7%
Industrials	0.428	0.561	0.556	31.1%	30.0%
Consumer Gds	0.361	0.577	0.555	59.7%	53.8%
Health Care	0.365	0.524	0.448	43.7%	22.9%
Consumer Svs	0.487	0.562	0.565	15.5%	16.0%
Telecom	0.457	0.731	0.541	59.9%	18.3%
Utilities	0.380	0.762	0.502	100.4%	31.9%
Financials	0.449	0.609	0.510	35.6%	13.5%
Technology	0.342	0.390	0.379	14.2%	10.8%
Average	0.440	0.596	0.534		

Table notes the numbers above represent the average of the correlations amongst the industry portfolios for the US, Developed Markets ex NA and the Emerging Markets. The % increase is simply the change in correlation for the period relative to the correlation measured in the pre-crisis period.

Table 12: Temporal Pattern of Daily Correlations Among the Pacific Market, the European Market and the US Market

Daily Correlations									
2007-Aug 2008	t-1			t			t+1		
	PAC	EUR	US	PAC	EUR	US	PAC	EUR	US
PAC_t	0.004	0.490	0.591	1.000	0.370	0.073	0.004	-0.044	-0.051
EUR_t	-0.044	-0.124	0.290	0.370	1.000	0.484	0.490	-0.124	-0.097
USA_t	-0.051	-0.097	-0.163	0.073	0.484	1.000	0.591	0.290	-0.163
9/12 - 10/27	t-1			t			t+1		
	PAC	EUR	US	PAC	EUR	US	PAC	EUR	US
PAC_t	0.084	0.481	0.806	1.000	0.657	0.123	0.084	-0.365	-0.290
EUR_t	-0.365	-0.113	0.354	0.657	1.000	0.646	0.481	-0.113	-0.245
USA_t	-0.290	-0.245	-0.174	0.123	0.646	1.000	0.806	0.354	-0.174

Table Notes: The numbers represent the correlation over the specified time period for the return to the market in the first column on day t and the return to the market in the column on day t-1, t or t+1. The results provide an indication of the patterns of price shock transmission around the globe. The top set of numbers is the pre-crisis period and the bottom numbers are the peak crisis period.

Appendix: A Timeline of Events and Policy Actions for the Financial Crisis

Sources:
http://www.stlouisfed.org/timeline/default.cfm
http://www.guardian.co.uk/business/2008/oct/08/creditcrunch.marketturmoil/print
http://edition.cnn.com/2008/BUSINESS/09/30/us.bailout.timeline/index.htm l
http://www.iht.com/bin/printfriendly.php?id=16318432

February 7, 2007 (Sun)
HSBC announces losses linked to U.S. subprime mortgages.

February 27, 2007 (Tue)
The Federal Home Loan Mortgage Corporation (Freddie Mac) announces that it will no longer buy the most risky subprime mortgages and mortgage-related securities.:

April 2, 2007 (Mon)
New Century Financial Corporation, a leading subprime mortgage lender, files for Chapter 11 bankruptcy protection.

May 17, 2007 (Thu)
Federal Reserve Chairman Ben Bernanke said growing number of mortgage defaults will not seriously harm the U.S. economy.

June 2007
Standard and Poor's and Moody's Investor Services downgrade over 100 bonds backed by second-lien subprime mortgages.

June 7, 2007 (Thu)
Bear Stearns informs investors that it is suspending redemptions from its High-Grade Structured Credit Strategies Enhanced Leverage Fund.

June 28, 2007 (Thu)
The Federal Open Market Committee (FOMC) votes to maintain its target for the federal funds rate at 5.25 percent.

July 11, 2007 (Wed)
Standard and Poor's places 612 securities backed by subprime residential mortgages on a credit watch.

July 24, 2007 (Tue)
Countrywide Financial Corporation warns of "difficult conditions."

July 31, 2007 (Tue)
Bear Stearns liquidates two hedge funds that invested in various types of mortgage backed securities.

August 6, 2007 (Mon)
American Home Mortgage Investment Corporation files for Chapter 11 bankruptcy protection.

August 7, 2007 (Tue)
The FOMC votes to maintain its target for the federal funds rate at 5.25 percent.

August 9, 2007 (Thu)
BNP Paribas, France's largest bank, halts redemptions on three investment funds.

August 10, 2007 (Fri)
The Federal Reserve Board announces that it "will provide reserves as necessary...to promote trading in the federal funds market at rates close to the FOMC's target rate of 5.25 percent. In current circumstances, depository institutions may experience unusual funding needs because of dislocations in money and credit markets. As always, the discount window is available as a source of funding

August 16, 2007 (Thu)
Fitch Ratings downgrades Countrywide Financial Corporation to BBB+, its third lowest investment-grade rating, and Countrywide borrows the entire $11.5 billion available in its credit lines with other banks.

August 17, 2007 (Fri)
The Federal Reserve Board votes to reduce the primary credit rate 50 basis points to 5.75 percent, bringing the rate to only 50 basis points above the FOMC's federal funds rate target. The Board also increases the maximum primary credit borrowing term to 30 days, renewable by the borrower.

September 14, 2007 (Fri)
The Chancellor of the Exchequer authorizes the Bank of England to provide liquidity support for Northern Rock, the United Kingdom's fifth-largest mortgage lender.

September 18, 2007 (Tue)
The FOMC votes to reduce its target for the federal funds rate 50 basis points to 4.75 percent. The Federal Reserve Board votes to reduce the primary credit rate 50 basis points to 5.25 percent.

October 1, 2007 (Mon)
Swiss bank UBS announces losses liked to U.S. subprime mortgages.

October 5, 2007 (Fri)
Investment bank Merrill Lynch reports losses of $5.5 billion.

October 10, 2007 (Wed)
U.S. Treasury Secretary Paulson announces the HOPE NOW initiative, an alliance of investors, servicers, mortgage market participants, and credit and homeowners' counselors encouraged by the Treasury Department and the Department of Housing and Urban Development.

October 15, 2007 (Mon)
Citigroup, Bank of America, and JPMorgan Chase announce plans for an $80 billion Master Liquidity Enhancement Conduit to purchase highly rated assets from existing special purpose vehicles.

Citigroup announces $6.5 billion third quarter losses.

October 24, 2007 (Wed)
Merrill Lynch announces losses to be over $8 billion.

October 31, 2007 (Wed)
The FOMC votes to reduce its target for the federal funds rate 25 basis points to 4.50 percent. The Federal Reserve Board votes to reduce the primary credit rate 25 basis points to 5.00 percent.

November 2007
Financial market pressures intensify, reflected in diminished liquidity in interbank funding markets.

December 11, 2007 (Tue)
The FOMC votes to reduce its target for the federal funds rate 25 basis points to 4.25 percent. The Federal Reserve Board votes to reduce the primary credit rate 25 basis points to 4.75 percent.

December 12, 2007 (Wed)
The Federal Reserve Board announces the creation of a Term Auction Facility (TAF) in which fixed amounts of term funds will be auctioned to depository institutions against a wide variety of collateral.

The FOMC authorizes temporary reciprocal currency arrangements (swap lines) with the European Central Bank (ECB) and the Swiss National Bank (SNB). The Fed states that it will provide up to $20 billion and $4 billion to the ECB and SNB, respectively, for up to 6 months.

December 21, 2007 (Fri)
The Federal Reserve Board announces that TAF auctions will be conducted every two weeks as long as financial market

conditions warrant.

Citigroup, JPMorgan Chase, and Bank of America abandon plans for the Master Liquidity Enhancement Conduit, announcing that the fund "is not needed at this time."

January 11, 2008 (Fri)
Bank of America announces that it will purchase Countrywide Financial in an all-stock transaction worth approximately $4 billion.

January 15, 2008 (Tue)
Citigroup reports $18.1 billion loss in fourth quarter.

January 17, 2008 (Thu)
Merrill Lynch reports $11.5 billion loss in fourth quarter. Washington Mutual posts losses.

January 18, 2008 (Fri)
Fitch Ratings downgrades Ambac Financial Group's insurance financial strength rating to AA, Credit Watch Negative. Standard and Poor's place Ambac's AAA rating onCreditWatch Negative. (Ambac is US's second largest bond insurer)

Spring-Nextel announce 4,000 layoffs.

Bush Administration announces details of stimulus plan to avert economic slowdown in speech. Plan call for a stimulus id $145B largely in the form of tax cuts that would provide up to $800 per person. Concern is expressed over lack of quick stimulus to those who pay not federal taxes

January 22, 2008 (Tue)
In an intermeeting conference call, the FOMC votes to reduce its target for the federal funds rate 75 basis points to 3.5 percent. The Federal Reserve Board votes to reduce the primary credit rate 75 basis points to 4 percent.

January 30, 2008 (Wed)
The FOMC votes to reduce its target for the federal funds rate 50 basis points to 3 percent. The Federal Reserve Board votes to reduce the primary credit rate 50 basis points to 3.5 percent.

Swiss bank UBS announces fourth quarter losses at $14 billion.

February 13, 2008 (Wed)
President Bush signs the Economic Stimulus Act of 2008 (Public Law 110-185) into law. Public Law 110-185

February 17, 2008 (Sun)
Northern Rock is taken into state ownership by the Treasury of the United Kingdom.

March 5, 2008 (Wed)
Carlyle Capital Corporation receives a default notice after failing to meet margin calls on its mortgage bond fund.

March 7, 2008 (Fri)
The Federal Reserve Board announces $50 billion TAF auctions on March 10 and March 24 and extends the TAF for at least 6 months

The Board also initiates a series of term repurchase transactions, expected to cumulate to $100 billion, conducted as 28-day term repurchase agreements with primary dealers.

March 11, 2008 (Tue)
The Federal Reserve Board announces the creation of the Term Securities Lending Facility (TSLF), which will lend up to $200 billion of Treasury securities for 28-day terms against federal agency debt, federal agency residential mortgage-backed securities

(MBS), non-agency AAA/Aaa private label residential MBS, and other securities.

The FOMC increases its swap lines with the ECB by $10 billion and the Swiss NationalBank by $2 billion and also extends these lines through Sept. 30, 2008.

March 14, 2008 (Fri)
The Federal Reserve Board approves the financing arrangement announced by JPMorgan Chase and Bear Stearns [see note for March 24]. The Federal Reserve Board also announces they are “monitoring market developments closely and will continue to provide liquidity as necessary to promote the orderly function of the financial system

March 16, 2008 (Sun)
The Federal Reserve Board establishes the Primary Dealer Credit Facility (PDCF), extending credit to primary dealers at the primary credit rate against a broad range of investment grade securities.

The Federal Reserve Board votes to reduce the primary credit rate 25 basis points to 3.25 percent, lowering the spread between the primary credit rate and FOMC target for the federal funds rate to 25 basis points. The Board also votes to increase the maximum maturity of primary credit loans to 90 days.

Bear Stearns, the U.S.'s fifth largest investment bank, collapses and is taken over by JP Morgan.

March 18, 2008 (Tue)
The FOMC votes to reduce its target for the federal funds rate 75 basis points to 2.25 percent. The Federal Reserve Board votes to reduce the primary credit rate 75 basis points to 2.50 percent.

March 24, 2008 (Mon)
The Federal Reserve Bank of New York announces that it will provide term financing to facilitate JP Morgan Chase & Co.’s acquisition of The Bear Stearns Companies Inc. A limited liability company (Maiden Lane) is formed to control $30 billion of Bear Stearns assets that are pledged as security for $29 billion in term financing from the New York Fed at its primary credit rate. JP Morgan Chase will assume the first $1 billion of any losses on the portfolio.

April 1, 2008 (Tue)
German Deutsche Bank reports credit losses of $3.9 billion in first quarter.

April 13, 2008 (Sun)
U.S. bank Wachovia Corp. reports big loss for quarter.

April 30, 2008 (Wed)
The FOMC votes to reduce its target for the federal funds rate 25 basis points to 2 percent. The Federal Reserve Board votes to reduce the primary credit rate 25 basis points to 2.25 percent.

May 2, 2008 (Fri)
The FOMC expands the list of eligible collateral for Schedule 2 TSLF auctions to include AAA/Aaa-rated asset-backed securities, in addition to already eligible residential and commercial MBS and agency collateralized mortgage obligations

The FOMC also increases existing swap lines with the ECB by $20 billion and with the Swiss National Bank by $6 billion.

The Federal Reserve Board expands TAF auctions from $50 billion to $75 billion.

May 12, 2008 (Mon)
HSBC writes off $3.2 billion in the first quarter linked to exposure to the U.S. subprime market.

June 5, 2008 (Thu)
The Federal Reserve Board announces approval of the notice of Bank of America to acquire Countrywide Financial Corporation.

Standard and Poor’s downgrades monoline bond insurers AMBAC and MBIA from AAA to AA.

June 25, 2008 (Wed)
The FOMC votes to maintain its target for the federal funds rate at 2.00 percent

July 11, 2008 (Fri)
The Office of Thrift Supervision closes IndyMac Bank, F.S.B. The Federal Deposit Insurance Corporation (FDIC) announces the transfer of the insured deposits and most assets of IndyMac Bank, F.S.B. to IndyMac Federal Bank, FSB. (IndyMac is the largest thrift ever to fail in the US.)

July 13, 2008 (Sun)
The Federal Reserve Board authorizes the Federal Reserve Bank of New York to lend to the Federal National Mortgage Association (Fannie Mae) and the Federal Home Loan Mortgage Corporation (Freddie Mac), should such lending prove necessary.

The U.S. Treasury Department announces a temporary increase in the credit lines of Fannie Mae and Freddie Mac and a temporary authorization for the Treasury to purchase equity in either GSE if needed.

July 15, 2008 (Tue)
The Securities Exchange Commission (SEC) issues an emergency order temporarily prohibiting naked short selling in the securities of Fannie Mae, Freddie Mac, and primary dealers at commercial and investment banks.

July 22, 2008 (Tue)
WaMu reports $3.3 billion loss for second quarter.

July 30, 2008 (Wed)
President Bush signs into law the Housing and Economic Recovery Act of 2008 (Public Law 110-289), which, among other provisions, authorizes the Treasury to purchase GSE obligations and reforms the regulatory supervision of the GSEs under a new Federal Housing Finance Agency.

The Federal Reserve Board extends the TSLF and PDCF through January 30, 2009, introduces auctions of options on $50 billion of draws on the TSLF, and introduces 84-day TAF loans.

The FOMC increases its swap line with the ECB to $55 billion.

August 5, 2008 (Tue)
The FOMC votes to maintain its target for the federal funds rate at 2.00 percent

August 17, 2008 (Sun)
Following an intermeeting conference call, the FOMC releases a statement about the current financial market turmoil, and notes that the "downside risks to growth have increased appreciably."

August 31, 2008 (Sun)
German Commerzbank AG takes over Dresdner Kleinwort investment bank.

September 7, 2008 (Sun)
The Federal Housing Finance Agency (FHFA) places Fannie Mae and Freddie Mac in government conservatorship. The U.S. Treasury Department announces three additional measures to complement the FHFA's decision: 1) Preferred stock purchase agreements between the Treasury/FHFA and Fannie Mae and Freddie Mac to ensure the GSEs positive net worth; 2) a new secured lending facility which will be available to Fannie Mae, Freddie Mac, and the Federal Home Loan Banks; and 3) a temporary program to purchase GSE MBS.

September 9, 2008 (Tue)
Lehman Brothers shares plummet to lowest level on Wall Street in more than a decade.

September 10, 2008 (Wed)
Lehman Brothers puts itself up for sale after reporting a $4 billion loss and says it will spin off its troubled commercial real estate assets.

September 12, 2008 (Fri)
1pm EST: With Lehman Brothers facing collapse, US officials struggle to find a buyer for the distressed investment bank.

September 13, 2008 (Sat)
9am EST: Teams of bankers flood the New York Federal Reserve building for the weekend to explore options for Lehman. Bank of America and Barclays head list of potential purchasers.

September 14, 2008 (Sun)
The Federal Reserve Board expands the list of eligible collateral for the PDCF to include any collateral that can be pledged in the tri-party repo system of the two major clearing banks. Previously PDCF collateral had been limited to investment-grade debt securities.

The Board also expands the list of collateral accepted by TSLF to include all investment-grade debt securities and increases the frequency of Schedule 2 TSLF auctions and total offering to $150 billion.

The Board also adopts an interim final rule that provides temporary exceptions to Section 23A of the Federal Reserve Act to allow insured depository institutions to provide liquidity to their affiliates for assets typically funded in the tri-party repo market.

9am EST: Talks over Lehman run into a third day. Traffic in New York snarls up under the sheer weight of backed-up, blacked-out limousines transporting the stressed-out bankers. In a weekend of furious negotiations, U.S. regulators make it clear there will be no government bailout for Lehman Brothers.

3pm EST: Barclays pulls out of the bidding and Bank of America turns its attention to Merrill Lynch.

September 15, 2008 (Mon)
11pm EST (Sun): Bank of America announces its intent to purchase Merrill Lynch & Co. for $50 billion.

12.30am EST: Lehman Brothers Holdings Incorporated files for Chapter 11 bankruptcy protection. SEC Filing

2am EST: 4,500 Lehman staff at its Canary Wharf HQ are told it's all over.

4am EST: Shares in HBOS, Britain's biggest mortgage lender, crash 34% in early trading.

11.30am EST: FTSE 100 closes almost 4% lower at 5,202.4, a 210 point drop, wiping out £50bn of value.

3pm EST: US authorities trying to put a rescue package together for insurance giant AIG agree on a $20bn lifeline.

4pm EST: On Wall Street the Dow Jones industrial average plunges 504 points to close at 10917.51.

September 16, 2008 (Tue)
The Federal Reserve Board authorizes the Federal Reserve Bank of New York to lend up to $85 billion to the American International Group (AIG) under Section 13(3) of the Federal Reserve Act.

The FOMC votes to maintain its target for the federal funds rate at 2.00 percent.

The net asset value of shares in the Reserve Primary Money Fund falls below $1, primarily due to losses on Lehman Brothers commercial paper and medium-term notes

2.30am EST: Barclays confirms that it is still talking to Lehman about buying some assets.

10am EST: Pressure piles on HBOS, whose shares are still down 30%, with a downgrade from Standard & Poor's.

4pm EST: Dow finishes up 141.5 points at 11,059 after zig-zagging around all day.

5pm EST: Barclays seals deal for Lehman's US assets.

September 17, 2008 (Wed)
The U.S. Treasury Department announces a Supplementary Financing Program consisting of a series of Treasury bill issues that will provide cash for use in Federal Reserve initiatives.

3:30am EST: US government agrees to give AIG $85bn to keep afloat, in return for control of the company.

5am EST: Russia suspends stock market trading.

7am EST: Libor - the borrowing rate banks charge each other - hits a seven-year high as the panic escalates.

8am EST: Barclays hints that it might buy Lehman's UK assets too.

10am EST: Bank of England extends its special liquidity scheme, after pressure from banks.

11am EST: Morgan Stanley shares fall 30%, as it become the latest bank under fire.

1.30pm EST: Merrill Lynch's John Thain defends $200m bonus pool for top brass.

2pm EST: Reports emerge that regulators are probing the practice of "naked" short sellers. The SEC announces a temporary emergency ban on short selling in the stocks of all companies in the financial sector.

4.30pm EST: HBOS takeover is finalized with Lloyds TSB.

7pm EST: Morgan Stanley looks for salvation through a merger with Wachovia.

September 18, 2008 (Thu)
The FOMC expands existing swap lines by $180 billion and authorizes new swap lines with the Bank of Japan, Bank of England, and Bank of Canada.

1am EST: Russian stock markets remain closed for a second day.

2am EST: £12.2bn takeover of HBOS is announced to the City, amid fears of massive job cuts.

4am EST: Gold is at a six-week high as investors flee shares and pile into commodities.

5am EST: Central banks around the world pump $180bn into the system in a concerted effort to end the crisis.

6am EST: India's stock market fluctuates wildly - with shares plunging before recovering after the government promises to help.

9am EST: Christopher Cox, America's most senior financial markets regulator, takes aim at short sellers.

10am EST: Goldman Sachs and Morgan Stanley shares fall sharply again on Wall Street.

1pm EST: UK's Financial Services Authority announces a ban on the short-selling of bank shares.

4pm EST: Wall Street closes 410 points higher as the US Federal Reserve starts briefing on an ambitious plan to create a federal "bad bank".

September 19, 2008 (Fri)
The Federal Reserve Board announces the creation of the Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility (AMLF) to extend non-recourse loans at the primary credit rate to U.S. depository institutions and bank holding companies to finance their purchase of high-quality asset-backed commercial paper from money market mutual funds.

The Federal Reserve Board also announces plans to purchase federal agency discount notes (short-term debt obligations issued by Fannie Mae, Freddie Mac, and Federal Home Loan Banks) from primary dealers.

The U.S. Treasury Department announces a temporary guaranty program that will make available up to $50 billion from the Exchange Stabilization Fund to guarantee investments in participating money market mutual funds.

3am EST: UK FSA names the 29 firms it hopes to save by banning short-selling.

5.30am EST: Russian stock markets bounce back after the government pledges 500bn roubles to fight the crisis.

UK government rushes through increase in guarantees for British bank deposits to £50,000.

Wells Fargo scuppers Citigroup's takeover of Wachovia.

US jobs data are worse than expected.

September 20, 2008 (Sat)
The U.S. Treasury Department submits draft legislation to Congress for authority to purchase troubled assets.

Paulson spends the weekend trying to thrash out his $700bn "bad bank" plan.

September 21, 2008 (Sun)
The Federal Reserve Board approves applications of investment banking companies Goldman Sachs and Morgan Stanley to become bank holding companies.

The Financial Services Authority holds crisis talks over a possible bail-out of Bradford & Bingley, which has seen its shares plunge 90% this year so far.

The administrator PWC battles to sell Lehman Brothers' UK operations.

September 22, 2008 (Mon)
Morgan Stanley and Goldman Sachs give up their status as investment banks and become traditional commercial banks that accept deposits from ordinary people and businesses, marking a dramatic change in the make-up of Wall Street.

Japan's Nomura buys Lehman Brothers' Asian operations.

Robert Willumstad, the departing head of AIG, gives up his $22m (£12m) golden parachute.

September 23, 2008 (Tue)
Political opposition to the $700bn bail-out plan grows in Washington, pushing shares prices lower.

The FSA starts to name and shame the bank short-sellers.

September 24, 2008 (Wed)
The FOMC establishes new swap lines with the Reserve Bank of Australia and the Sveriges Riksbank for up to $10 billion each and with the Danmarks Nationalbank and the Norges Bank for up to $5 billion each. The swap lines are authorized through January 30, 2009

Warren Buffett invests $5bn (£2.7bn) in Goldman Sachs and warns that failure to agree a $700bn bailout could result in an "economic Pearl Harbor".

The FBI starts an investigation into Fannie Mae and Freddie Mac, AIG and Lehman Brothers over their role in the sub-prime mortgage crisis.

Henry Paulson bows to intense pressure to include limits on what Wall Street bankers can be paid in his $700bn bail-out plan.

Gordon Brown tells world leaders in New York that an international regulator may be needed to stop the mess being repeated.

September 25, 2008 (Thu)
The Office of Thrift Supervision closes Washington Mutual Bank. JPMorgan Chase acquires the banking operations of Washington Mutual in a transaction facilitated by the FDIC.

Ireland becomes the first state in the eurozone to fall into recession.

Jobless figures are up and orders are down in the US, signaling the dire state of the economy.

Even one of America's largest companies, GE, is not immune from the "unprecedented weakness and volatility" of the world's financial markets and profits slide.

Overnight the $700bn bail-out plan in the US appears to have stalled.

September 26, 2008 (Fri)
The FOMC increases existing swap lines with the ECB by $10 billion and the Swiss National Bank by $3 billion. Federal Reserve Press Release

America's biggest savings and loan company, Washington Mutual – or WaMu – is seized by federal regulators overnight and sold to JP Morgan for $1.9bn in a deal that sends shockwaves through Wall Street and main street alike.

Traders are worried about the possible failure of the $700bn bail-out plan and the FTSE 100 slides into the red again. The plan appears to be coming apart despite Paulson actually begging on one knee for the deal to be passed.

September 28, 2008 (Sun)
In the US, the House speaker, Nancy Pelosi, pleads with representatives to pass the now 100-page plan to save Wall Street.

September 29, 2008 (Mon)
The FOMC authorizes a $330 billion expansion of swap lines with Bank of Canada, Bank of England, Bank of Japan, Danmarks Nationalbank, ECB, Norges Bank, Reserve Bank of Australia, Sveriges Riksbank, and Swiss National Bank Swap lines outstanding now total $620 billion.

The Federal Reserve Board expands the TAF, announcing an increase in the size of the 84-day maturity auction to $75 billion and two forward TAF auctions totaling $150 billion to provide short-term (one- to two-week) TAF credit over year-end.

The U.S. Treasury Department opens its Temporary Guarantee Program for Money Market Funds [see note for September 19]. The temporary guarantee program provides coverage to shareholders for amounts that they held in participating money market funds as of the close of business on September 19, 2008.

The FDIC announces that Citigroup will purchase the banking operations of Wachovia Corporation. The FDIC agrees to enter into a loss-sharing arrangement with Citigroup on a $312 billion pool of loans, with Citigroup absorbing the first $42 billion of losses and the FDIC absorbing losses beyond that. In return, Citigroup would grant the FDIC $12 billion in preferred stock and warrants.

The U.S. House of Representatives rejects legislation submitted by the Treasury Department requesting authority to purchase troubled assets from financial institutions [see note for September 20].

Wall Street has a fit. The Dow Jones plunges 777 points, its biggest ever fall in points terms.

Europe: As a result of the intense fear among bankers about which institution will be next to fold, the interbank lending rate goes through the roof despite desperate attempts by Central Banks to pump cash into the system.

UK: UK's Bradford & Bingley is nationalized, with Santander to buy deposits for $38.2bn. As news of the Bradford & Bingley rescue sinks in, the London stock market plummets in what will end up being one of the FTSE 100 index's worst ever trading days.

Iceland: The government is forced to take control of one of the nation's biggest banks, Glitnir.

Belgium: Belgian giant Fortis is bailed out by Netherlands, Belgium and Luxembourg.

September 30, 2008 (Tue)
Asian stock markets are the first to react to the shock news that the $700bn Wall Street bailout has failed. When London opens it is carnage with banking shares clobbered.

In the US, July has reported the biggest ever fall in house prices.

The banks themselves are finding it increasingly difficult to raise financing with the cost of inter-bank borrowing experiencing its biggest ever one-day rise.

Dominique Strauss-Kahn, the managing director of the IMF, believes a bail-out is the only option for the US economy.

Irish government guarantees safety of bonds, debts and deposits.

October 2, 2008 (Thu)
The US Senate has voted in favor of the Wall Street bail-out.

European leaders are considering their own bail-out, which could cost up to 300bn (£237bn). The French president, Nicolas Sarkozy, leads the push.

Hopes that the US deal may get through help shares prices recover somewhat in London.

But by the close of play, Wall Street still has the jitters.

October 3, 2008 (Fri)
Wells Fargo announces a competing proposal to purchase Wachovia Corporation that does not require assistance from the FDIC.

Congress passes and President Bush signs into law the Emergency Economic Stabilization Act of 2008 (Public Law 110-343), which establishes the $700 billion Troubled Asset Relief Program (TARP). H.R. 1424

US jobs data are worse than expected.

October 4, 2008 (Sat)
Europe: Brown attends an emergency summit in Paris to discuss the crisis with his French, German and Italian counterparts.

German Chancellor Angela Merkel announces guarantee of deposits in German banks.

October 6, 2008 (Mon)
The Federal Reserve Board announces that the Fed will pay interest on depository institutions' required and excess reserve balances at an average of the federal funds target rate less 10 basis points on required reserves and less 75 basis points on excess reserves.

Danish government announces plan to guarantee bank deposits.

Wells Fargo and Citigroup agree to legal standstill in battle for Wachovia.

Bank of America reports 68% profit drop and announces stock sale to raise $10bn.

October 7, 2008 (Tue)
The Federal Reserve Board announces the creation of the Commercial Paper Funding Facility (CPFF), which will provide a liquidity backstop to U.S. issuers of commercial paper through a special purpose vehicle that will purchase three-month unsecured and asset-backed commercial paper directly from eligible issuers.

The FDIC announces an increase in deposit insurance coverage to $250,000 per depositor as authorized by the Emergency Economic Stabilization Act of 2008.

London, 7.30pm BST: Darling confirms the government will make a historic announcement tomorrow on changes to the banking system. It is thought it will involve using £50bn of taxpayers' money to take a major stake in high street banks.

Icelandic bank Landsbanki is nationalized, and Icesave, Landsbanki's internet bank, freezes accounts.

October 8, 2008 (Wed)
2.30am EST: UK Treasury announces what amounts to a £500bn bank rescue package to stop the country's financial system melting down. Most bank shares fall again.

7.00am EST: The FOMC votes to reduce its target for the federal funds rate 50 basis points to 1.50 percent. The Federal Reserve Board votes to reduce the primary credit rate 50 basis points to 1.75 percent.

UK, China, Canada, Sweden, Switzerland and ECB also cut interest rates.

The Federal Reserve Board authorizes the Federal Reserve Bank of New York to borrow up to $37.8 billion in investment-grade, fixed-income securities from American International Group (AIG) in return for cash collateral. Federal Reserve Press Release

London: Icesave accounts are declarred in default. This move triggers Financial Services Compensation Scheme which will return 100% of savers' money.

The FTSE 100 closes down 238.5 points at 4366.7, a 5.2% decline and its lowest level since 19 August 2004. Around £57bn is wiped off the value of Britain's top companies.

IMF forecasts "major global downturn."

October 9, 2008 (Thu)
The International Monetary Fund announces emergency plans to bail out governments affected by the financial crisis, after warning that no country would be immune from the ripple effects of the credit crunch.

Iceland nationalizes its biggest bank Kaupthing.

October 10, 2008 (Fri) – BLACK FRIDAY
A global rout starts in Asia as recession fears deepen, with Japan's Nikkei index falling almost 10%, its biggest drop for 20 years.

Singapore officially slides into recession on the back of falling demand for manufacturing exports from US and Europe.

3.07am EST: The FTSE 100 plunges more than 10% to 3847 points, careering through the 4,000 mark for the first time in five years. The sell-off wipes more than £100bn off the value of Britain's biggest companies.

Oil prices slump to $80 a barrel as energy watchdog drops demand forecast. Prices tumble by almost $5 a barrel to a one-year low amid growing fears that the deepening financial crisis will squash demand for fuel.

9.40am EST: The Dow crashes nearly 700 points in the first few minutes of trading. President Bush urges confidence in the US government's ability to manage the worsening financial crisis, but his words have little effect.

12.10pm EST: The FTSE 100 closes 8.85% lower at 3932.1 – a 381.7 point fall, wiping about £89.5bn off the value of Britain's biggest companies. This is the worst daily fall since the crash of 1987, beating Monday's 7.85% decline.

October 11, 2008 (Sat)
G7 finance ministers and the IMF meet in Washington. The G7 comes up with a five-point plan, which includes spending billions of taxpayers' money to rebuild the global banking system and reopen the flow of credit.

The head of the IMF, Dominique Strauss-Kahn tells a Washington meeting: "Intensifying solvency concerns about a number of the largest US-based and European financial institutions have pushed the global financial system to the brink of systemic meltdown."

October 12, 2008 (Sun)
The Federal Reserve Board announces its approval of an application by Wells Fargo & Co. to acquire Wachovia Corporation.

Gordon Brown travels to Paris where European officials are desperate to prevent a continent-wide meltdown in the banking sector. He succeeds in persuading the EU's core countries to adopt a plan along the lines of his £500bn banking system bail-out. Leaders agree to guarantee loans between banks until the end of 2009.

Australia agrees to guarantee deposits for the next 3 years.

New Zealand guarantees bank deposits for 2 years.

October 13, 2008 (Mon)

The FOMC increases existing swap lines with foreign central banks. The Bank of England, European Central Bank, and Swiss National Bank announce that they will conduct tenders of U.S. dollar funding at 7-, 28-, and 84-day maturities at fixed interest rates.

5.30am EST: At a Downing Street press conference, Gordon Brown says the unprecedented cash injection into the UK banking sector was essential and he predicts other countries will follow Britain's lead. "The government cannot just leave people on their own to be buffeted about," he says. UK bails out 3 banks: RBS, HBOS and Lloyds TSB at the cost of $63bn. Bank of England loans $174mn to Icelandic bank Landsbanki to help repay UK depositors.

The 15 members of the eurozone, led by Germany and France, unveil large, coordinated plans along British lines to provide their banks with capital funding.

The prospect of governments pumping vast sums into banks on both sides of the Atlantic sends stocks soaring.

October 14, 2008 (Tue)

The Federal Reserve announces additional details of the Commercial Paper Funding Facility (CPFF).

The FOMC increases its swap line with the Bank of Japan

U.S. Treasury Department announces the Troubled Asset Relief Program (TARP) that will purchase capital in financial institutions under the authority of the Emergency Economic Stabilization Act of 2008. The U.S. Treasury will make available $250 billion of capital to U.S. financial institutions. This facility will allow banking organizations to apply for a preferred stock investment by the U.S. Treasury. Nine large financial organizations announce their intention to subscribe to the facility in an aggregate amount of $125 billion.

The FDIC creates a new Temporary Liquidity Guarantee Program to guarantee the senior debt of all FDIC-insured institutions and their holding companies, as well as deposits in non-interest-bearing deposit transaction through June 30, 2009.

Shares in Asia, London and the rest of Europe rallied for a second day as the financial world waited for America to follow Britain's lead and partially nationalize its banks.

Afternoon: Meetings between the US government and the heads of major banks were held in Washington.

October 15, 2008 (Wed)

US banks JP Morgan and Wells Fargo reported big falls in profits, and retail sales in the US suffered their biggest fall in three years, with the decline in car sales hitting 3.8%.

UK: Unemployment figures in the UK showed the biggest rise since the country's last recession 17 years ago, up to 5.7% – 1.79 million people.

Iceland rushed to stave off economic ruin by slashing interest rates by 3.5% and pursuing talks with Russia over the possibility of a multibillion euro loan.

Southeast Asian nations agree to start fund to provide financial support to countries in crisis. World Bank commits $10bn to the planned fund.

European and Asian stock markets fall after initial upswing. Russian stock market posts losses as RTS Index falls below 800 points.

October 16, 2008 (Thu)
In the US, Citigroup suffered its fourth consecutive quarterly loss after taking hits of more than $13bn to cover liabilities arising from the credit crunch.

In Japan, the Prime Minister, Taro Aso, dismissed the US bank bail-out as "insufficient", in the first real sign of a split among the world's richest countries on how to address the credit crunch and looming global recession.

Opec called an emergency meeting in Vienna as the oil price fell to less than half the $147 it traded at in July.

Swiss government bails out UBS with $59.2bn.

Hungarian central bank gets cash injection from ECB to the value of $6.7bn.

EU leaders at Brussels summit call for complete overhaul of international financial system.

October 21, 2008 (Tue)
The Federal Reserve Board announces creation of the Money Market Investor Funding Facility (MMIFF). Under the facility, the Federal Reserve Bank of New York provides senior secured funding to a series of special purpose vehicles to facilitate the purchase of assets from eligible investors, such as U.S. money market mutual funds. Among the assets the facility will purchase are U.S. dollar-denominated certificates of deposit and commercial paper issued by highly rated financial institutions with a maturity of 90 days or less.

China warned the financial crisis was damaging its economic growth.

October 22, 2008 (Wed)
The Federal Reserve Board announces that it will alter the formula used to determine the interest rate paid to depository institutions on excess reserve balances. The new rate will be set equal to the lowest FOMC target rate in effect during the reserve maintenance period less 35 basis points.

The stricken US bank Wachovia reported the biggest quarterly loss of any bank since the onset of the credit crunch, with a deficit of $24bn - more than the total price being paid for the North Carolina lender by its rival Wells Fargo.

Pakistan sought emergency bail-out funds from the IMF.

October 23, 2008 (Thu)
Former Fed chief Alan Greenspan admitted he had been "partially wrong" in his hands-off approach towards the banking industry. The credit crunch had left him in a state of "shocked disbelief," he admitted before a congressional committee.

October 24, 2008 (Fri)
PNC Financial Services Group Inc. purchases National City Corporation, creating the fifth largest U.S. bank.

UK: Shares and the pound slumped as official government figures confirmed that the UK economy was shrinking, with the biggest drop in GDP since 1990.

October 27, 2008 (Mon)
The spectre of a cascade of failing economies from the Baltic to Turkey was raised as a $16.5bn IMF bailout for Ukraine was mired in political infighting and Hungary sought its own $10bn rescue package.

October 28, 2008 (Tue)
The U.S. Treasury Department purchases a total of $125 billion in preferred stock in nine U.S. banks under the Capital Purchase Program. Treasury Department CPP Transaction Report

The FOMC and Reserve Bank of New Zealand establish a $15 billion swap line. Federal Reserve Press Release

Autumn's market mayhem has left the world's financial institutions nursing losses of $2.8tn, the Bank of England said, as it called for fundamental reform of the global banking system.

October 29, 2008 (Wed)
The FOMC votes to reduce its target for the federal funds rate 50 basis points to 1.00 percent. The Federal Reserve Board reduces the primary credit rate 50 basis points to 1.25 percent. Federal Reserve Press Release

The FOMC also establishes swap lines with the Banco Central do Brasil, Banco de Mexico, Bank of Korea, and the Monetary Authority of Singapore for up to $30 billion each. Federal Reserve Press Release

The International Monetary Fund (IMF) announces the creation of a short-term liquidity facility for market-access countries.

The International Monetary Fund, the European Union and the World Bank announced a massive rescue package for Hungary.

The prospect of fresh cuts in interest rates on both sides of the Atlantic helped propel Wall Street stocks to a dramatic rebound, with the Dow scoring its second-biggest points gain ever, just short of 900.

October 30, 2008 (Thu)
Deutsche Bank reported steep falls in pre-tax and net profits and a further series of writedowns in the third quarter.

October 31, 2008 (Fri)
The Bank of Japan cut interest rates for the first time in seven years in response to the global financial crisis. The bank cut the key interest rate from 0.5% to 0.3%, a move some criticized as half-hearted.

November 5, 2008 (Wed)
The Federal Reserve Board announces that it will alter the formula used to determine the interest rate paid to depository institutions on required and excess reserve balances. The rate on required reserves will be set equal to the average target federal funds rate over the reserve maintenance period. The rate on excess balances will be set equal to the lowest FOMC target rate in effect during the reserve maintenance period.

November 10, 2008 (Mon)
The Federal Reserve Board approves the applications of American Express and American Express Travel Related Services to become bank holding companies.

The Federal Reserve Board and the U.S. Treasury Department announce a restructuring of the government's financial support of AIG. The Treasury will purchase $40 billion of AIG preferred shares under the TARP program, a portion of which will be used to reduce the Federal Reserve's loan to AIG from $85 billion to $60 billion. The terms of the loan are modified to reduce the interest rate to the three-month LIBOR plus 300 basis points and lengthen the term of the loan from two to five years.

The Federal Reserve Board also authorizes the Federal Reserve Bank of New York to establish two new lending facilities for AIG: The Residential Mortgage-Backed Securities Facility will lend up to $22.5 billion to a newly formed limited liability company (LLC) to purchase residential MBS from AIG; the Collateralized Debt Obligations Facility will lend up to $30 billion to a newly formed LLC to purchase CDOs from AIG (Maiden Lane III LLC).

November 11, 2008 (Tue)
The U.S. Treasury Department announces a new streamlined loan modification program with cooperation from the Federal Housing Finance Agency (FHFA), Department of Housing and Urban Development, and the HOPE NOW alliance.

November 12, 2008 (Wed)
U.S. Treasury Secretary Paulson formally announces that the Treasury has decided not to use TARP funds to purchase illiquid mortgage-related assets from financial institutions.

November 14, 2008 (Fri)
The U.S. Treasury Department purchases a total of $33.5 billion in preferred stock in 21 U.S. banks under the Capital Purchase Program.

November 14-17, 2008 (Fri-Mon)

Three large U.S. life insurance companies seek TARP funding: Lincoln National, Hartford Financial Services Group, and Genworth Financial announce their intentions to purchase lenders/depositories and thus qualify as savings and loan companies to access TARP funding.

November 18, 2008 (Tue)
Executives of Ford, General Motors, and Chrysler testify before Congress, requesting access to the TARP for federal loans.

November 20, 2008 (Thu)
Fannie Mae and Freddie Mac announce that they will suspend mortgage foreclosures until January 2009.

November 21, 2008 (Fri)
The U.S. Treasury Department announces that it will help liquidate The Reserve Fund's U.S. Government Fund. The Treasury agrees to serve as a buyer of last resort for the fund's securities to ensure the orderly liquidation of the fund.

The U.S. Treasury Department purchases a total of $3 billion in preferred stock in 23 U.S. banks under the Capital Purchase Program.

November 23, 2008 (Sun)
The U.S. Treasury Department, Federal Reserve Board, and FDIC jointly announce an agreement with Citigroup to provide a package of guarantees, liquidity access, and capital. Citigroup will issue preferred shares to the Treasury and FDIC in exchange for protection against losses on a $306 billion pool of commercial and residential securities held by Citigroup. The Federal Reserve will backstop residual risk in the asset pool through a non-recourse loan. In addition, the Treasury will invest an additional $20 billion in Citigroup from the TARP.

November 25, 2008 (Tue)
The Federal Reserve Board announces the creation of the Term Asset-Backed Securities Facility (TALF), under which the Federal Reserve Bank of New York will lend up to $200 billion on a non-recourse basis to holders of AAA-rated asset-backed securities and recently originated consumer and small business loans. The U.S. Treasury will provide $20 billion of TARP money for credit protection.

The Federal Reserve Board announces a new program to purchase direct obligations of housing related government-sponsored enterprises (GSEs)– Fannie Mae, Freddie Mac and Federal Home Loan Banks–and MBS backed by the GSEs. Purchases of up to $100 billion in GSE direct obligations will be conducted as auctions among Federal Reserve primary dealers. Purchases of up to $500 billion in MBS will be conducted by asset managers.

November 26, 2008 (Wed)
The Federal Reserve Board announces approval of the notice of Bank of America Corporation to acquire Merrill Lynch and Company.

December 2, 2008 (Tue)
The Federal Reserve Board announces that it will extend three liquidity facilities, the Primary Dealer Credit Facility (PDCF), the Asset-Backed Commercial Paper Money Market Fund Liquidity Facility (AMLF), and the Term Securities Lending Facility (TSLF) through April 30, 2009.

December 3, 2008 (Wed)
The SEC approves measures to increase transparency and accountability at credit rating agencies and thereby ensure that firms provide more meaningful ratings and greater disclosure to investors.

December 5, 2008 (Fri)
The U.S. Treasury Department purchases a total of $4 billion in preferred stock in 35 U.S. banks under the Capital Purchase Program.

December 10, 2008 (Wed)
The FDIC reiterates the guarantee of federal deposit insurance in the event of a bank failure.

December 12, 2008 (Fri)
The U.S. Treasury Department purchases a total of $6.25 billion in preferred stock in 28 U.S. banks under the Capital

Purchase Program.

December 15, 2008 (Mon)
The Federal Reserve Board announces that it has approved the application of PNC Financial Services to acquire National City Corporation.

December 16, 2008 (Tue)
The FOMC votes to establish a target range for the effective federal funds rate of 0 to 0.25 percent. The Federal Reserve Board votes to reduce the primary credit rate 75 basis points to 0.50 percent.

The Federal Reserve Board also establishes the interest rates on required reserve balances and excess balances at 0.25 percent for reserve maintenance periods beginning December 18, 2008.

December 19, 2008 (Fri)
The U.S. Treasury Department authorizes loans of up to $13.4 billion for General Motors and $4.0 billion for Chrysler from the TARP.

The Federal Reserve Board announces revised terms and conditions of the Term Asset-Backed Securities Loan Facility (TALF). Among the revisions are an extension of TALF loans from maturities of one year to three years and an expansion of eligible ABS collateral.

The U.S. Treasury Department purchases a total of $27.9 billion in preferred stock in 49 U.S. banks under the Capital Purchase Program.

December 22, 2008 (Mon)
The Federal Reserve Board approves the application of CIT Group Inc., an $81 billion financing company, to become a bank holding company. The Board cites “unusual and exigent circumstances affecting the financial markets” for expeditious action on CIT Group’s application.

December 24, 2008 (Wed)
The Federal Reserve Board approves the applications of GMAC LLC and IB Finance Holding Company, LLC (IBFHC) to become bank holding companies, on conversion of GMAC Bank, a $33 billion Utah industrial loan company, to a commercial bank. GMAC Bank is a direct subsidiary of IBFHC and an indirect subsidiary of GMAC LLC, a $211 billion company. The Board cites “unusual and exigent circumstances affecting the financial markets” for expeditious action on these applications. As part of the agreement, General Motors will reduce its ownership interest in GMAC to less than 10 percent.

December 29, 2009
The U.S. Treasury Department announces that it will purchase $5 billion in equity from GMAC as part of its program to assist the domestic automotive industry. The Treasury also agrees to lend up to $1 billion to General Motors "so that GM can participate in a rights offering at GMAC in support of GMAC's reorganization as a bank holding company." This commitment is in addition to the support announced on December 19, 2008.

December 30, 2008
The Federal Reserve Board announces that it expects to begin to purchase mortgage-backed securities backed by Fannie Mae, Freddie Mac and Ginnie Mae under a previously announced program in early January 2009 (see November 25, 2008).

December 30, 2008
The U.S. Securities and Exchange Commission (SEC) releases a report that recommends against the suspension of fair value accounting standards. The report was mandated by the Emergency Economic Stabilization Act of 2008 (EESA).

December 31, 2008
The U.S. Treasury Department purchases a total of $1.91 billion in preferred stock from seven U.S. banks under the Capital Purchase Program.

January 5, 2009

The Federal Reserve Bank of New York begins purchasing fixed-rate mortgage-backed securities guaranteed by Fannie Mae, Freddie Mac and Ginnie Mae under a program first announced on November 25, 2008. |

January 7, 2008
The Federal Reserve Board announces two changes to the Money Market Investor Funding Facility (MMIFF) that 1) expand the set of institutions eligible to participate in the MMIFF and 2) reduce the minimum yield on assets eligible to be sold to the MMIFF.

January 8, 2009
Moody's Investor Services issues a report suggesting that the Federal Home Loan Banks are currently facing the potential for significant accounting write-downs on their $76.2 billion private-label MBS securities portfolio. According to Moody's, only four of 12 Banks' capital ratios would remain above regulatory minimums under a worst-case scenario

January 9, 2009
The Congressional Oversight Panel issues its second monthly report on the expenditure of the Troubled Asset Relief Program (TARP).

The U.S. Treasury Department purchases a total of $4.8 billion in preferred stock from 43 U.S. banks under the Capital Purchase Program.

January 12, 2009
The FDIC issues a letter to FDIC-supervised institutions calling on them to implement a process to monitor their use of capital injections, liquidity support and/or financing guarantees obtained through Treasury, FDIC, and Federal Reserve financial stability programs

At the request of President-Elect Obama, President Bush submits a request to Congress for the remaining $350 billion in TARP funding for use by the incoming administration.

January 13, 2009
The Federal Home Loan Bank of Seattle reports that it will likely report a risk-based capital deficiency and suspend its dividend because of a decline in the market value of its mortgage-backed securities portfolio. The move follows a similar announcement on January 8 by the Federal Home Loan Bank of San Francisco.

January 16, 2009
The U.S. Treasury Department purchases a total of $1.4 billion in preferred stock from 39 U.S. banks under the Capital Purchase Program.

The Treasury, Federal Reserve, and FDIC announce a package of guarantees, liquidity access, and capital for Bank of America. The Treasury and the FDIC will enter a loss-sharing arrangement with Bank of America on a $118 billion portfolio of loans, securities, and other assets in exchange for preferred shares. In addition, and if necessary, the Federal Reserve will provide a non-recourse loan to back-stop residual risk in the portfolio. Separately, the Treasury will invest $20 billion in Bank of America from the TARP in exchange for preferred stock.

The Treasury, Federal Reserve and FDIC finalize terms of their guarantee agreement with Citigroup. (See announcement on November 23, 2008.)

The Treasury Department announces that it will lend $1.5 billion from the TARP to a special purpose entity created by Chrysler Financial to finance the extension of new consumer auto loans.

January 23, 2009
The U.S. Treasury Department purchases a total of $326 million in preferred stock from 23 U.S. banks under the Capital Purchase Program.

January 28, 2009
The National Credit Union Administration (NCUA) Board announces that the NCUA will guarantee uninsured shares at all corporate credit unions through February 2009 and establish a voluntary guarantee program for uninsured shares of credit unions through December 2010. The Board also approves a $1 billion capital purchase in U.S. Central Corporate

Federal Credit Union. Corporate credit unions provide financing, check clearing, and other services to retail credit unions.

January 30, 2009
The Board of Governors announces a policy to avoid preventable foreclosures on certain residential mortgage assets held, controlled or owned by a Federal Reserve Bank. The policy was developed pursuant to section 110 of the Emergency Economic Stabilization Act.

January 30, 2009
The U.S. Treasury Department purchases a total of $1.15 billion in preferred stock from 42 U.S. banks under the Capital Purchase Program.

February 3, 2009
The Federal Reserve announces the extension, through October 30, 2009, of the existing liquidity programs scheduled to expire on April 30, 2009. The Board of Governors and the FOMC note "continuing substantial strains in many financial markets." In addition, the swap lines between the Federal Reserve and other central banks are also extended to October 30, 2009. The expiration date for the TALF remains December 31, 2009, and the TAF does not have an expiration date.

February 6, 2009
The Federal Reserve Board releases additional terms and conditions of the Term Asset-Backed Securities Loan Facility (TALF). Under the TALF, the Federal Reserve Bank of New York will lend up to $200 billion to eligible owners of certain AAA-rated asset-backed securities backed by newly and recently originated auto loans, credit card loans, student loans and SBA-guaranteed small business loans.

The U.S. Treasury Department purchases a total of $238.5 million in preferred stock from 28 U.S. banks under the Capital Purchase Program.

February 10, 2009
U.S. Treasury Secretary Timothy Geithner announces a Financial Stability Plan involving Treasury purchases of convertible preferred stock in eligible banks, the creation of a Public-Private Investment Fund to acquire troubled loans and other assets from financial institutions, expansion of the Federal Reserve's Term Asset-Backed Securities Loan Facility (TALF), and new initiatives to stem residential mortgage foreclosures and to support small business lending.

The Federal Reserve Board announces that is prepared to expand the Term Asset-Backed Securities Loan Facility (TALF) to as much as $1 trillion and broaden the eligible collateral to include AAA-rated commercial mortgage-backed securities, private-label residential mortgage-backed securities, and other asset-backed securities. An expansion of the TALF would be supported by $100 billion from the Troubled Asset Relief Program (TARP). The Federal Reserve Board will announce the date that the TALF will commence operations later this month.

February 13, 2009
The U.S. Treasury Department purchases a total of $429 million in preferred stock from 29 U.S. banks under the Capital Purchase Program.

February 17, 2009
The Treasury Department releases its first monthly survey of bank lending by the top 20 recipients of government investment through the Capital Purchase Program. The survey found that banks continued to originate, refinance and renew loans from the beginning of the program in October through December 2008.

President Obama signs into law the "American Recovery and Reinvestment Act of 2009", which includes a variety of spending measures and tax cuts intended to promote economic recovery.

February 18, 2009
President Obama announces The Homeowner Affordability and Stability Plan. The plan includes a program to permit the refinancing of conforming home mortgages owned or guaranteed by Fannie Mae or Freddie Mac that currently exceed 80 percent of the value of the underlying home. The plan also creates a $75 billion Homeowner Stability Initiative to modify the terms of eligible home loans to reduce monthly loan payments. In addition, the Treasury Department will increase its preferred stock purchase agreements with Fannie Mae and Freddie Mac to $200 billion, and increase the limits on the size of Fannie Mae and Freddie Mac's portfolios to $900 billion.

February 23, 2009
The Treasury Department, Federal Deposit Insurance Corporation, Office of the Comptroller of the Currency, Office of Thrift Supervision, and the Federal Reserve Board issue a joint statement that the U.S. government stands firmly behind the banking system, and that the government will ensure that banks have the capital and liquidity they need to provide the credit necessary to restore economic growth. Further, the agencies reiterate their determination to preserve the stability of systemically important financial institutions.

February 24, 2009
The U.S. Treasury Department purchases a total of $365.4 million in preferred stock from 23 U.S. banks under the Capital Purchase Program.

February 25, 2009
The Federal Reserve Board, Federal Deposit Insurance Corporation, Office of the Comptroller of the Currency and Office of Thrift Supervision announce that they will conduct forward-looking economic assessments or "stress tests" of eligible U.S. bank holding companies with assets exceeding $100 billion. Supervisors will work with the firms to estimate the range of possible future losses and the resources to absorb such losses over a two-year period.The assessment process is expected to be completed by the end of April 2009.

February 26, 2009
The FDIC announces that the number of "problem banks" increased from 171 institutions with $116 billion of assets at the end of the third quarter of 2008, to 252 insured institutions with $159 billion in assets at the end of fourth quarter of 2008. The FDIC also announces that there were 25 bank failures and five assistance transactions in 2008, which was the largest annual number since 1993.

Fannie Mae reports a loss of $25.2 billion in the fourth quarter of 2008, and a full year 2008 loss of $58.7 billion. Fannie Mae also reports that on February 25, 2009, the Federal Housing Finance Agency submitted a request for $15.2 billion from the Treasury Department under the terms of the Senior Preferred Stock Purchase Agreement in order to eliminate Fannie Mae's net worth deficit as of December 31, 2008.

February 27, 2009
The Treasury Department announces its willingness to convert up to $25 billion of Citigroup preferred stock issued under the Capital Purchase Prrogram into common equity. The conversion is contingent on the willingness of private investors to convert a similar amount of preferred shares into common equity. Remaining Treasury and FDIC preferred shares issued under the Targeted Investment Program and Asset Guarantee Program would be converted into a trust preferred security of greater structural seniority that would carry the same 8% cash dividend rate as the existing issue.

The Federal Deposit Insurance Corporation (FDIC) announces changes in its risk-based assessment system and a 20 basis point emergency special assessment on insured depository institutions to be collected on September 30, 2009.

The U.S. Treasury Department purchases a total of $394.9 million in preferred stock from 28 U.S. banks under the Capital Purchase Program.