TD Economics

Special Report

October 17, 2008

ORIGINS AND POLICY RESPONSE TO THE CREDIT CRUNCH IN NORTH AMERICA

The global financial system has suffered a severe and virtually unprecedented blow, leading to the failure of a number of major institutions and forcing government intervention on a massive scale in a number of countries. This is a shocking development that reflects the fallout from acute economic and financial imbalances that had developed in the first half of this decade.

HIGHLIGHTS

- **The origin of the recent financial turmoil was a global credit bubble that developed in the first half of this decade, which led to significant real asset and financial asset inflation.**
- **Overly accommodative monetary policy, inappropriate lending practices and underestimation of risk played a role in the credit bubble.**
- **Rapid financial innovation and structural changes in the global financial system that shifted risk away from traditional retail banking to other parts of the financial system outstripped the ability of regulators to keep pace.**
- **Governments and central banks have responded aggressively to shore up the damage from the collapse of the credit bubble. See time line on back pages.**
- **The policy actions should eventually reduce strains in the financial system, but it will not occur quickly. They key sign that the tide is turning will be when interbank lending rates start to decline on a sustained basis.**

U.S. housing boom and bust…

Many view the financial calamity as a made-in-America event caused by a U.S. housing bubble created by inappropriate mortgage loans and high risk mortgage products. Through securitization and a variety of complex structured products, these mortgage loans were transferred from the balance sheets of lenders to investors around the globe. As a result, when the value of these financial products plunged, it created a global financial problem. There is a great deal of truth to this summary of events, yet it only tells one part of the story.

…one dimension of a global credit bubble

The true origin of the financial turmoil was a credit bubble and an under-pricing of risk at a time when rapid financial innovation outpaced regulatory controls and made risk assessment problematic. The trend was global in nature – it was not a U.S. event, although the degree of imbalance was certainly the worst in America.

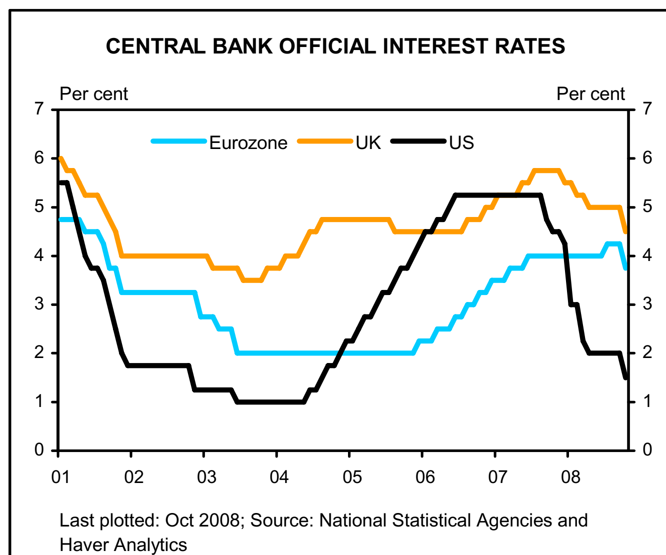
In order to understand what occurred, one must rewind the dial back to the recovery from the 2001 economic slump when global income growth soared. This dramatic increase in income lifted the available funds for loans and investment. It also led to a dramatic shift in the terms of trade balances between countries, as best illustrated by the growing current account surpluses in Asia and the deficit in the United States. The world became awash in liquidity, with funds chasing any opportunities for good returns.

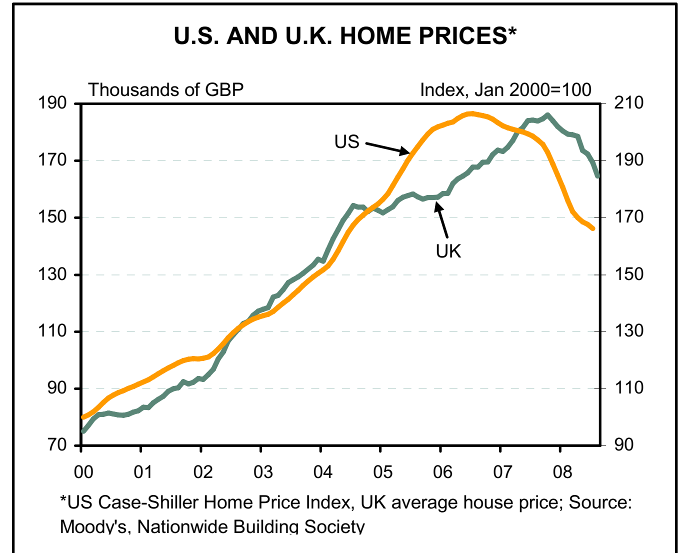
In many countries, the credit bubble translated into sharply higher real estate prices and abnormally strong returns in equity markets. At the same time, overly accomodative monetary policy in many countries following the tech wreck and the 9/11 in 2001 fuelled spending and investment, while simultaneously creating a quest for yield that pushed investors – institutional and retail – into

ever higher risk financial products. This trend was further aggravated by the fact that when investors were not immediately hurt by taking on more risk, they were encouraged to accept even more risk. The result was record low commercial and corporate spreads over government yields. It also fuelled growth in non-traditional financial products, such as financial derivatives and complex structured products, which met the demands of investors by providing higher returns at a time of low traditional yields. Unfortunately, the complexity of these same products made assessing risk more and more difficult. The financial innovation allowed financial firms to increase the leverage of their balance sheets and the rapidly changing times outstripped the ability of regulators to keep pace. Indeed, the traditional regulatory environment was structured to address conventional retail banking, but the problems largely developed in other areas of the financial system, as the new financial products saw the development of a shadow banking system where the ultimate providers of credit to households and businesses were investment banks, hedge funds, pension funds, and other non-retail bank entities.

Many warnings were made about these trends. For example, the IMF Financial Stability Report repeatedly indentified the growing financial imbalances and the pace of financial innovation as matters of grave concern. However, complacency ruled the day.

As with all financial bubbles, it was only a matter of time before a catalyst came along to cause a correction, and that catalyst occurred when a rebalancing of monetary policy led to tighter credit conditions in late 2005 and early 2006.





Credit crunch unfolds

The U.S. housing bubble burst after prices peaked in June 2006, but it was only 15 months ago when the credit crunch erupted that the true financial consequences began to be recognized. Since then, global financial markets have been on a roller coaster ride. The financial losses impaired the balance sheets of many financial institutions, as assets were marked down but liabilities were unchanged. The resulting need to shore up the financial institution balance sheets induced a shift towards cash hoarding. Uncertainty about the financial well-being of other financial institutions also diminished the willingness to lend between financial firms. The combination of these trends caused the cost of funding to financial institutions to jump sharply higher, as evidenced by a dramatic increase in the London Interbank Offer Rate (LIBOR) over government rates. In other words, credit became less available and more costly.

Policy makers respond

There is a very old analogy that an economy is like a set of interconnected gears or cogs. The financial system is the oil or grease that allows that machine to operate. The credit crunch has been like throwing sand into the machine. The gears are not meshing properly and at times there have been risks that machine could seize up. In order to avoid an economic catastrophe, monetary and fiscal policy authorities have been forced to act. The initial response was principally made by central banks that increased the availability of short-term funding to their domestic financial system and eased monetary policy in an effort to limit the fallout from the financial crisis on the real economy.

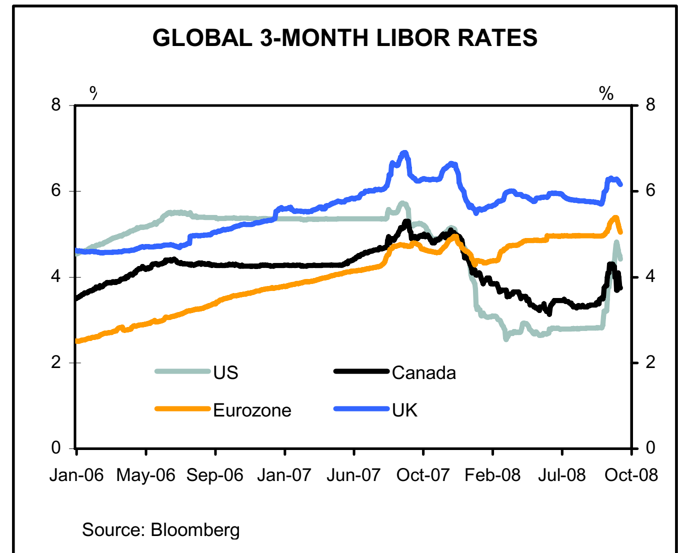
However, these actions proved inadequate. Eventually, fiscal policy was employed to shore up the financial sector through measures aimed at bolstering the balance sheets of weak institutions.

U.S. efforts to address the financial crisis

A time line of the policy actions in North America to the credit crunch is provided on the final two pages of the report, but it is worth quickly reviewing the key developments.

Due to the deep imbalances in the U.S. economy, extreme measures have been required. Our current tally has the U.S. government, through the U.S. Treasury, providing slightly less than US$1 trillion dollars to address the structural weakness in the U.S. financial system. This has been done through three measures: US$225 billion to nationalize Fannie Mae and Freddie Mac (two government sponsored entities that held more than 50 per cent of the mortgages in the United States), US$50 billion to guarantee U.S. money market mutual funds, and the US$700 billion Troubled Asset Relief Program (TARP) bill that passed through Congress. The latter measure is broadly defined and is aimed at addressing the root of the financial problem – bad assets on the balance sheets of financial institutions that are reducing the ability and/or willingness to make loans. The TARP will accomplish this task by providing capital to financial institutions. For example, it is the source of US$250 billion in funds that will be used to buy preferred equity stocks in nine major financial institutions and a variety of regional banks. There is also an expectation that some of the TARP funds will be directed to buying up some of the dubious-quality assets held by some firms. This policy action is not about bailing out banks from the mistakes of the past. It is about creating the necessary conditions to get financial institutions lending to homeowners and businesses again.

Meanwhile, the Federal Deposit Insurance Corporation (FDIC) has increased the deposit insurance limit on interest-bearing accounts to US$250,000 and fully ensured all non-interest bearing bank deposits until Dec 31, 2009. It also guaranteed new senior unsecured debt (the primary type of debt financing) that U.S. banks issue by June 30, 2009 with a maturity up to three years. The former is aimed at bolstering household confidence that their money is safe, while the latter is to help financial institutions to raise new capital.



On the monetary policy front, the Federal Reserve has responded aggressively. The Fed has slashed the overnight rate to a mere 1.50% and we expect that it will soon return to the 1.00% low that prevailed after 9/11. It has provided enormous liquidity to financial markets through a variety of initiatives that amount to US$2.13 trillion dollars.

The Term Auction Facility (TAF) allows the Federal Reserve to conduct an auction through which depository institutions can obtain funds by putting up a variety of different financial collateral. The TAF has extended US$1.367 trillion in liquidity. Primary securities dealers have been able to access US$218.3 billion in funds through a newly created Term Securities Lending Facility (TSLF) and Primary Discount Credit Facility (PDCF), both of which allow cash to be obtained by putting up collateral. The Fed has also issued $30 billion in loans to help fund the Bear Stearn's debt buyout by JP Morgan Chase and US$122.8 billion in loans to AIG. Unlimited currency swap arrangements have also been put in place with major central banks abroad, which are designed to be drawn upon if financial institutions in the foreign countries find they cannot obtain needed U.S. dollars during the credit crisis.

Finally, the Fed recently announced a commercial paper facility through which it will provide funding to U.S. issuers of commercial paper through the purchase of three-month unsecured and asset-backed commercial paper directly from eligible issuers. While the rate cuts are aimed at creating a steeper yield curve that should ultimately help boost profitability in the financial system and provide stimulus to the economy, the various other actions are all about

providing needed short-term money to financial institutions.

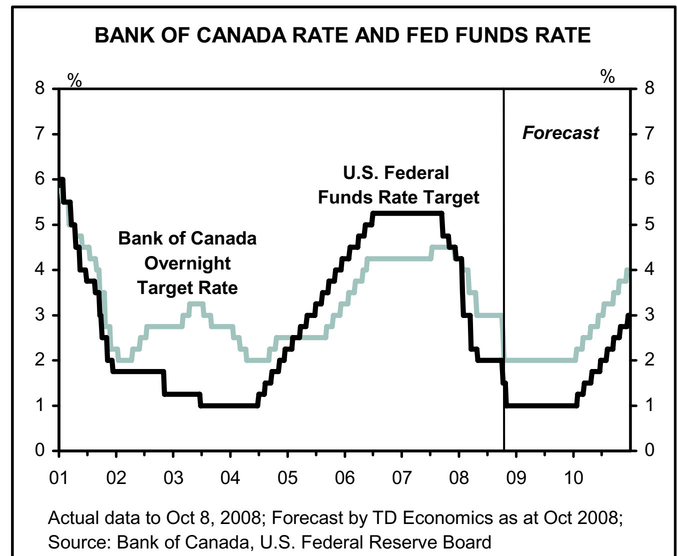
Putting all of these efforts together, the total value of U.S. monetary and fiscal policy liquidity actions amounts to more than US$3 trillion dollars – a staggering amount that does not include assorted other non-Fed or Treasury items like the US$9 billion acquisition of IndyMac by the Federal Deposit Insurance Corporation (FDIC). Financing these commitments will put additional strain on U.S. government finances in the near term, which points to higher U.S. government bond yields and a weaker U.S. dollar.

However, it should be stressed that the ultimate fiscal cost will be dramatically less than US$3 trillion. The Fed's actions are not spent from the public purse – as they are largely temporary liquidity provisions, with the loans tending to be made and then repaid over short periods between 1-day and 3-months time. The U.S. Treasury's policies could carry a larger taxpayer burden, but the policy response represents the U.S. government taking an investment position in the financial sector. The fiscal price tag will ultimately depend upon how the financial institutions perform in the future and what happens to the value of the assets transferred to the government.

Canadian policy response

The Canadian policy response to the credit crunch has been much more subdued. The Bank of Canada lowered the overnight rate to 2.50% and we believe that another half point reduction to 2.00% is in store. The Bank also provided additional liquidity to financial institutions through Purchase and Resale Agreements (PRAs) as needed. The PRAs are similar in nature to the U.S. liquidity initiatives in that they give out loans temporarily in exchange for financial collateral. The value of PRAs as of November 6th will be $30 billion.

The Government of Canada has also recently taken action with the announcement that it would buy up to $25 billion in pooled mortgage loans from Canadian financial institutions through reverse auctions conducted by the Canadian Mortgage and Housing Corporation (CMHC). This action provides Canadian lenders with the ability to remove loans from their balance sheets in return for cash at a time that liquidity is problematic. It should be stressed, however, that the risks to the Government are negligible because the pooled mortgage loans are restricted to those that were insured by the CMHC, all of which are prime



quality loans. Due to the auction process and the lower borrowing cost of the Government, there is an expectation that the public sector will run a profit on the program.

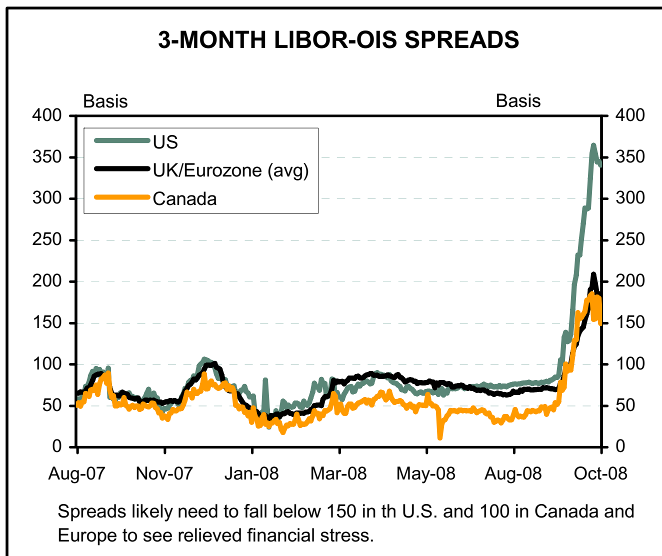
The policy action is a win-win for both government and Canadian banks. The first $5 billion tranche of the mortgage pool auctions was held on October 16 and the average rate paid by bank participants was 132 basis points above the cost of funding for the Government of Canada, whereas the rate at which banks would have had to borrow from markets was 230 basis points. This illustrates that the government made a positive return on the transaction and the financial institutions received financing at a lower cost than would have been faced through normal channels.

The more limited policy response in Canada is a testimony to the fact that the Canadian financial system has remained on a sound footing throughout the credit crunch. Although financial losses have been incurred due to exposures to U.S. mortgage backed securities and other structured products that have fallen in value during the credit crisis, the impact has been limited and the blow to balance sheets has been limited to a few selected institutions that have since raised capital. The greater challenge to Canadian financial institutions has come from the higher costs of raising capital in global markets and the resulting lower profit margins on many products. This is why the greatest policy efforts have been targeted at increasing access to short-term financing and, with the expanded Canada Mortgage Bond program, medium-term financing as well.

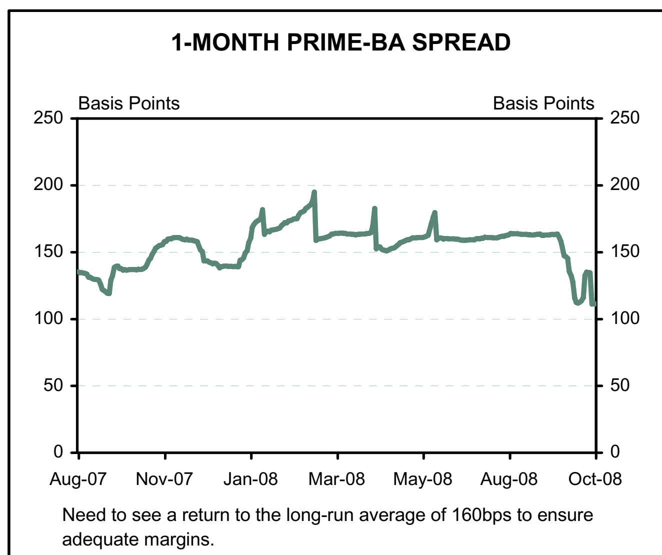
Will the policies work?

The critical issue is whether the policy response will alleviate the credit crunch. These are uncertain times and it is difficult to give a definitive answer. The U.S. measures do appear to be targeted at the root of the problem – weak balance sheets in the financial system. As the government funds are dispersed in the coming months one would expect the financial position of firms to eventually improve. If so, credit should start to flow again and interbank lending rates would decline.

However, it should be stressed that the policies are not a magic wand that will make the problems go away overnight. There is also likely to be significant additional demands for financing from many firms in the coming months, as past credit programs reach their maturity, which could limit the scope for borrowing costs to recede. Moreover, further financial shocks cannot be ruled out. For example, U.S. home prices are still well above their 2002 levels – when the housing boom started – and inventories of unsold homes are running at excessively high levels, both of which point to a further decline in real estate prices in the months ahead. The global economy is headed for a recession, and while this is increasingly being priced into financial markets, there is still a risk that the full extent of the weakness is not anticipated. Financial problems overseas also pose a risk of filtering back to the North American financial sector.



Spreads likely need to fall below 150 in th U.S. and 100 in Canada and Europe to see relieved financial stress.



Need to see a return to the long-run average of 160bps to ensure adequate margins.

The conclusion is that a close eye should be kept on changes in the cost of funding. In the U.S., the benchmark is the difference between LIBOR and 3-month T-Bills referred to as the TED spread. This captures the difference between what financial institutions charge each other to borrow and the risk free rate of interest. In Canada, the comparable metric is LIBOR less the Overnight Index Swap (OIS) rate. An increase in these spreads indicates greater financial strain.

An alternate Canadian measure that directly relates to banking is the Prime lending rate less the 1-month Bankers Acceptance (BA) rate – as this captures the difference between the benchmark for bank loans compared to the cost to banks to raise short-term funding. A decrease in this measure signals declining profitability.

The evidence that the policy actions are easing the financial distress would be if the above mentioned spreads improve. If this does not occur in the coming months, there would be greater downside risks to the economy and further policy actions would be required.

For those wishes to keep abreast of developments on this front, TD Economics will post a daily tracking of the interbank lending rates on our website at www.td.com/economics starting mid-next week. We will also be updating and posting the North American credit crunch timeline on the web site.

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2008 North American Credit Crunch Timeline and Federal Reserve/U.S. Treasury Spending[1]

Date	Event/Measure	Federal Reserve Spending	U.S. Treasury Spending
Dec 12, 2007	Federal Reserve establishes the Term Auction Facility (TAF) to provide short-term liquidity to depository institutions, and swap line agreements with the ECB and the Swiss National Bank[2].	$64 bln	--
Jan 22	Federal Reserve cuts fed funds target by 75 bps to 3.50% at an unscheduled FOMC meeting, the largest one-time cut in 23 years. The Bank of Canada cuts the overnight rate target by 25 bps to 4.00%.	--	--
Jan 30	Federal Reserve cuts fed funds target by another 50 bps to 3.00%.	--	--
Feb 13	President Bush signs the Economic Stimulus Act of 2008 into law. The Act proposes to provide over $150 billion in direct aid to American households.	--	--
Mar 4	Bank of Canada cuts overnight rate target by 50 bps to 3.50%.	--	--
Mar 7	Federal Reserve initiates a series of term (28-day) repo agreements for primary dealers ranging from U.S. Treasuries to agency mortgage-backed securities.	$100 bln	--
Mar 11	Federal Reserve establishes the Term Securities Lending Facility (TSLF) which extends loans to primary dealers in U.S. treasuries collateralized by a pre-specified range of securities.	$200 bln	--
Mar 16	Federal Reserve establishes the Primary Discount Credit Facility (PDCF), an overnight facility that extends loans to primary dealers collateralized against a range of debt securities[3].	$25.7 bln	--
Mar 17	The Federal Reserve extends loan to help absorb Bear Stearns' bad debt in buyout by JPMorgan Chase.	$30 bln	--
Mar 18	Federal Reserve cuts fed funds target by an additional 75 bps to 2.25% at another unscheduled FOMC meeting.	--	--
Mar 31	Bank of Canada expands list of eligible securities to be used as collateral to include bank-issued ABCP in term PRA transactions[4].	--	--
Apr 22	Bank of Canada cuts overnight rate target by 50 bps to 3.00%.	--	--
Apr 25	Investors vote in favour of frozen ABCP restructuring plan. The ABCP had been frozen since Aug 16, 2007[5].	--	--
May 19	Federal Reserve increases the size of TAF auctions[6].	$110 bln	--
Jul 11	IndyMac Bancorp Inc. is taken over by the FDIC and its assets and secured liabilities seized. IndyMac later files for bankruptcy on Aug 1, 2008. The FDIC is quoted saying the estimated cost to the agency is about $9 billion.	--	--
Jul 13	Federal Reserve allows Fannie Mae and Freddie Mac to borrow from discount window.	--	--
Sep 7	Freddie Mac and Fannie Mae are put under conservatorship. The Treasury establishes a secured lending facility to the other 12 Federal Home Loan Banks with an undisclosed amount available for loans.	--	$225 bln minimum
Sep 15	Bank of America buys Merrill Lynch in an all-stock deal. Lehman Brothers files for bankruptcy protection. Barclays would later purchase the core business of Lehman Brothers on Sept 20.	--	--
Sep 16	The Federal Reserve, with support from the Treasury, issues a loan to insurance firm AIG.	$85 bln	--
Sep 18	Additional currency swaps are coordinated by the Federal Reserve with the central banks of Canada, Japan, and England. Swap lines with the ECB and SNB are increased[7]. Bank of Canada begins new series of term PRA transactions[8].	$223 bln	--
Sep 19	The U.S. Treasury establishes a temporary guaranty program for participating U.S. money market mutual fund companies, insuring all deposits in participating funds until Sept 21, 2009, that were made before Sept 21, 2008. The Federal Reserve announces the asset-backed commercial paper money market mutual fund liquidity facility[9].	$130 bln	$50 bln
Sep 22	Morgan Stanley & Goldman Sachs become bank holding companies[10].	--	--
Sep 24	Additional currency swap lines are coordinated with the central banks of Australia, Sweden, Denmark and Norway.	$30 bln	--
Sep 25	Washington Mutual is taken over by JPMorgan Chase in a deal brokered by the FDIC.	--	--

2008 North American Credit Crunch Timeline and Federal Reserve/U.S. Treasury Spending Cont'd			
Date	Event/Measure	Federal Reserve Spending	U.S. Treasury Spending
Sep 29	The Federal Reserve increases the size of TAF auctions for 84-day credit. In addition, the size of the credit swap agreements with the aforementioned central banks is increased. Citigroup submits a proposal to acquire the banking operations of Wachovia. The FDIC has entered a loss sharing arrangement such that they will absorb any losses beyond $42 billion of a $312 billion pool of loans.	$643 bln[11]	--
Oct 2	The SEC extends ban on short-selling of 800 financial companies[12].	--	--
Oct 3	The House of Representatives passes the bill (which the senate had passed the evening before) to give the Treasury Department the authority to issue treasury securities to finance the purchases of troubled assets within the U.S. The bill is later signed into law.	--	$700 bln
Oct 6	Federal Reserve increases the size of TAF auctions.	$450 bln	--
Oct 7	Federal Reserve establishes Commercial Paper Funding Facility (CPFF) to purchase unsecured and asset-backed CP via an SPV in order to provide additional short-term liquidity to eligible issuers.	--	--
Oct 8	The central banks of the U.S., Canada, the U.K., the EU, Sweden, and Switzerland participate in a coordinated easing of monetary policy. All 6 central banks cut their official policy rates by 50 basis points. The Federal Reserve extends an additional loan to AIG.	$37.8 bln	--
Oct 10	The Canadian government announces it will purchase up to $25 billion in insured mortgage pools through CMHC.	--	--
Oct 12	Wachovia is acquired by Wells Fargo in an all-stock deal.	--	--
Oct 13	Federal Reserve removes currency swap limits with the Bank of England, the European Central Bank, and the Swiss National Bank – The Federal Reserve will supply an unlimited amount of dollar liquidity to these 3 central banks.	unlimited	--
Oct 14	The Federal Reserve and U.S. Treasury initiate TARP by purchasing preferred shares in 9 major financial institutions[13]. In addition, the FDIC will guarantee the senior-debt of all FDIC-insured institutions and their holding companies. The Federal Reserve also announces that they will lift the currency swap limit with the Bank of Japan and provide unlimited dollar liquidity to Japanese firms, as needed. The Bank of Canada increases the size of term PRA transactions[14].	unlimited	--
--	**Total Spending**	$2.13 trillion[15]	$975 billion

[1] Amounts shown are net new money unless otherwise stated.
[2] $40 billion is allotted to TAF auctions while the swap line agreements are established at $24 billion.
[3] The amount shown is the weekly average of outstanding loans since the PDCF's inception. Securities eligible to be used as collateral are investment grade only.
[4] Typical PRA's are overnight transactions and only federal and provincial government issued and insured securities are eligible as collateral; term (28-day) PRA transactions were held first on December 13, 2007 as an extraordinary liquidity measure and are ongoing. The list of securities eligible as collateral for the term transactions was extended to include U.S. treasuries, BA's, and bank issued ABCP.
[5] The plan involved exchanging the commercial paper for government term securities with equal maturities and would later be upheld by both the Ontario Court of Appeals on June 25, and the Supreme Court of Canada on Sept 19. In addition, litigation protection was given to the non-bank institutions that issued the frozen ABCP, a decision that was widely debated.
[6] These increases occurred incrementally between December 17, 2007 and May 19, 2008.
[7] Swap lines with the ECB and SNB were increased on March 11, May 2, and July 30 to $67 billion. Also on September 18, the SEC bans the short-selling of 800 financial companies until Oct 3.
[8] The Bank of Canada held the first term PRA transaction on Dec 18, 2007 amounting to $2 bln on a 28-day term which was not renewed. The Bank then held a 2nd series of 7 transactions amounting to a rolling $4 bln between March 20 and June 12. The latest series of term PRA transactions began on Sept 19. As of Oct 9, the Bank had $12 bln in outstanding PRA transactions comprised of $6 bln in 1-month terms and $ 6 bln in 3-month terms. As of Nov 6, the total outstanding amount will be $20 billion.
[9] The MMMF guarantee program by the Treasury began on Sept 29. The AMLF from the Federal Reserve extends loans to depository institutions and bank holding companies to purchase ABCP from MMMF's. These loans have maturities equal to those of the commercial paper purchased. The amount listed is the weekly amount outstanding as of the most recent week.
[10] With the purchases of Merrill Lynch & Bear Stearns and the bankruptcy of Lehman Brothers, none of the original investment banks remain in that structure.
[11] Total amount available in rolling loans via the TAF increases by $300 billion. This is comprised of an increase of $150 billion in 28-day and 84-day credit and a new series of forward TAF auctions amounting to $150 billion which will have 1-2 week terms. Swap agreements with international central banks increases by $330 billion. Swap agreements with the ECB and SNB were increased on September 26 by $13 billion.
[12] The original ban that was set for Oct 3 was extended to Oct 17, but was again changed to Oct 9.
[13] The 9 companies include Citigroup, Goldman Sachs, Wells Fargo, Bank of America, JPMorgan Chase, Morgan Stanley, Merrill Lynch, State Street, and Mellon. The Treasury will spend $250 billion of the $700 billion TARP in capital injections, $125 billion of which will be injected into the 9 aforementioned firms.
[14] They will hold an additional 1-month term PRA transaction amounting to $10 billion, thereby increasing the total amount outstanding to $30 billion.
[15] This value is now dependent on how much dollar liquidity is provided to European and Japanese firms via currency swaps. No additional money has been added to the total as it is unclear how much will be used and whether or not the original swap agreement cap was even exhausted. The original swap lines for the 4 central banks were capped at $500 billion.