

Adverse Selection and Financial Crises

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- *Adverse selection is an impediment to the efficient functioning of a market that arises when one of the parties to a transaction has more information than the other. In financial markets, adverse selection can lead to market freezes and liquidity hoarding, reflecting buyers' beliefs that most securities offered for sale are of low quality.*
- *Uncertainty about asset values, a flight to liquidity, and an underestimation of systemic risk can amplify the effect of adverse selection in a particular market and propagate its impact to the entire financial system.*
- *Government intervention can mitigate problems of adverse selection in financial markets. The effectiveness of policy responses depends on the cause of a market freeze.*

The stability of the financial system is one of the main concerns of central banks: as the recent global financial crisis illustrates, financial system disruptions can trigger a sharp contraction in economic activity, impair the transmission of monetary policy, and undermine the efficient allocation of capital. Continuously open financial markets are one essential feature of a resilient financial system (Carney 2010a). In the recent crisis, trading in several financial markets was dramatically reduced or stopped completely,¹ and those trades that did occur were executed at significant discounts. Such disruptions in market activity played a key role in transmitting and amplifying the financial crisis. The purpose of this article is to examine the role of adverse selection—a situation in which only low-quality products are available in the market because one party to a financial contract has better information than the other—in causing such market disruptions.²

Information asymmetries such as adverse selection are the basis of the prevalent explanations for market freezes. If buyers cannot assess an asset's quality, its market price will reflect the expected quality based on the quality of all the assets offered for sale in the market. This asymmetric information between buyers and sellers can generate adverse selection: as the price falls, sellers of high-quality assets withdraw from the market, leaving only low-quality assets (lemons) for sale. As a result, trading in the asset may diminish or halt altogether because buyers fear that if they transact they will be left with an overpriced asset (lemon). Moreover, such assets lose their ability to serve as collateral for other transactions, which contributes to the credit crunch. Adverse selection played an important role in the financial crisis of 2007–09 and in earlier crisis episodes.

¹ For example, markets for collateralized debt obligations, asset-backed commercial paper, and repurchase agreements.

² In his Nobel-prize-winning work, Akerlof (1970) uses the market for used cars as an example of adverse selection (when only bad cars—lemons—remain in the market) generated by asymmetric information about product quality between buyers and sellers. Since then, asymmetric information has been established as the potential cause of market breakdowns in many other cases.

This article explains how adverse selection in a particular market (such as the subprime-mortgage market) can lead to market freezes and liquidity hoarding and how it can be amplified into a severe crisis affecting many financial markets. Adverse selection is usually present even under normal economic conditions, but it does not significantly affect market liquidity. When the economy is in a crisis, however, adverse selection may lead to significant losses when market trading halts. This article describes several mechanisms that can significantly increase the initial (small) effect of adverse selection and propagate it to the entire financial system. While the problem of adverse selection can be reduced by government intervention, the appropriate policy response depends on the cause of a particular market freeze.

The article begins with a description of adverse selection and the problems it can create in financial markets. This is followed by a brief overview of the role of adverse selection in the financial crises in emerging economies during the 1990s and how the resulting capital imbalances contributed to the recent crisis. The next section focuses on the evidence of adverse selection and amplification mechanisms in the financial crisis of 2007–09. Finally, possible policy responses and their effectiveness are discussed.

Adverse Selection in Financial Markets

Information imperfections, such as asymmetric information, are important frictions in financial markets. Even in normal times, borrowers in credit markets often know more than lenders about the quality of the collateral and the riskiness of their investments. If high- and low-risk borrowers are indistinguishable ex-ante, then high-risk borrowers benefit at the expense of low-risk borrowers. The resulting problem of adverse selection (when high-quality borrowers choose not to participate in the market) leads to higher interest rates and a decrease in lending.

Adverse selection and financial instability

There are several channels, such as an increase in interest rates, deterioration of financial institutions' balance sheets, and maturity mismatch that can aggravate problems caused by adverse selection and lead to financial instability.

In the presence of asymmetric information, a small increase in the interest rate can lead to a large reduction in lending. A higher interest rate increases the

likelihood that high-quality borrowers will withdraw from the market, aggravating the problem of adverse selection. As a result, the average quality of the borrowers falls, which in turn raises the interest rate even further. If adverse selection is severe enough, the credit market may collapse (Mishkin 1990). Adverse selection may cause banks to impose credit rationing—putting quantitative limits on lending to some borrowers. By limiting the supply of loans, banks reduce the average default risk and therefore alleviate adverse-selection problems (Stiglitz and Weiss 1981). Another way to reduce adverse selection is to require collateral for the loan (Mishkin 1990). With collateral, even if the borrower defaults, the lender can recover losses by selling the collateral. Therefore, the asymmetric information about the borrower's default probability becomes less important.

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Many financial institutions tend to finance long-term investment with short-term debt. This maturity mismatch makes them vulnerable to economic shocks. Even a small shock may lead to a financial crisis, resulting in costly asset liquidation and a large decline in asset prices. If the financial system's potential short-term obligations exceed the liquidation value of its assets, the entire financial system may collapse (Chang and Velasco 2001). For example, almost all of the emerging-market countries that experienced financial crises in the 1990s had the combination of large short-term liabilities and illiquid long-term assets. The maturity mismatch of financial institution's balance sheets was also an important factor in the financial crisis of 2007–09 (Diamond and Rajan 2009; Brunnermeier 2009).

Even if there is no maturity mismatch, shocks that cause a deterioration in the balance sheets of financial institutions make the problem of adverse selection more severe by increasing credit risk. A negative shock to balance sheets causes banks to liquidate their assets, which lowers asset prices and further deteriorates balance sheets. This, in turn, amplifies the initial shock and further aggravates adverse selection (Brunnermeier 2009; Krishnamurthy 2010). This balance-sheet effect was an important factor in reinforcing and propagating adverse selection in most financial crises, including the crisis of 2007–09 and the earlier crises in emerging economies.

Financial crises in emerging markets

The causes of the recent financial crisis are similar to those underlying the financial crises in emerging economies in the late 1990s. Asymmetric information between domestic investors (borrowers) and foreign investors (lenders) can lead to adverse-selection problems in a country that finances its domestic investment and consumption through foreign debt or foreign equity.³ These informational problems may exacerbate financial crises, resulting in large capital outflows and fire sales of domestic firms.⁴

Countries that have experienced financial crises in the past tend to have larger demand for aggregate holdings of safe (liquid) assets, which provide a cushion if a crisis does occur (Kirabaeva 2010). On the other hand, countries with little experience of financial crises tend to have smaller aggregate holdings of safe liquid assets relative to illiquid, risky, long-term investments. In these countries, when a financial crisis occurs, it is more severe and is more likely to be accompanied by market freezes. As a result, while capital flows into emerging-market countries are often volatile,⁵ capital flows into the United States are more stable, driven by a search for safe instruments (Caballero and Krishnamurthy 2009).

Caballero and Krishnamurthy argue that one of the key contributors to the recent financial crisis was a *safe-assets imbalance*.⁶ A global excess demand from foreign investors and central banks, as well as from domestic financial institutions, for safe U.S. debt instruments led to low real interest rates. The shortage of such assets provided the U.S. financial system with the incentive to produce new highly rated (safe) instruments, primarily by securitizing existing long-term, risky assets.⁷ These securitized assets became a source of systemic fragility. Indeed, Acharya and Schnabl (2010) find empirical evidence that the geography of the

recent crisis was determined by global banking flows, particularly by a country's exposure to the market for asset-backed securities.

The Financial Crisis of 2007–09

Adverse selection in the subprime-mortgage market led to market freezes and liquidity hoarding in the recent financial crisis. Increasing uncertainty about asset values, a flight to liquidity,⁸ and an underestimation of systemic risk amplified the effect of adverse selection and propagated it to the entire financial system.

Adverse selection in securities markets and systemic risk

While banks have traditionally been the main providers of credit in the economy, the role of the “shadow” banking system in managing and diversifying risks has increased in recent years. The shadow banking system includes market-based financial institutions, such as investment banks, money-market mutual funds, and mortgage brokers. These institutions are the main players in securitization, which grew substantially in the past decade (Adrian and Shin 2009).

Securitization brought new information asymmetries to financial markets because the complexity of the instruments and their lack of transparency made it difficult for investors to evaluate securitized assets.⁹ Structured products, such as collateralized debt obligations (CDOs), were created from diversified portfolios of mortgages and other types of assets, such as corporate bonds, credit cards, and auto loans. The pooled portfolios were sliced into different tranches that were prioritized based on how they would absorb losses from the underlying portfolio. The top tranches were constructed to receive a AAA rating. These tranches were the first to be paid out of the underlying cash flows and were widely considered to be safe, with a minimal risk of default. The most junior equity tranches (which became known as “toxic waste”) were the last to be paid (Gorton 2008a).

Large holdings of securitized products increased the exposure of many financial institutions to systemic risk (i.e., the risk of market-wide instability such as market freezes) because of their skewed payoffs: they produced high returns in normal times but incurred substantial losses during the crisis. They were also

3 In Mexico in 1995, Russia in 1998, Brazil in 1999, and Argentina in 2001, the debt was owed mainly by governments; in Indonesia, Korea, and Thailand in 1997, it was owed primarily by private banks and firms. In all of these cases, the countries' vulnerabilities were exacerbated by currency mismatches: since assets are typically denominated in the domestic currency while debt is denominated in a foreign currency, an unanticipated depreciation or devaluation increases the value of debt. As a result, financial crises in emerging economies are usually accompanied by a currency crisis.

4 Acharya, Shin, and Yorulmazer (2007) and Kirabaeva (2009) show how adverse selection can explain the fire sale of direct investments during liquidity crises.

5 Capital flows that have equity-like features (e.g., foreign direct investment) are regarded as more stable and less prone to reversals, while debt flows, consisting of bank loans and bonds, are more volatile. Speculative and volatile capital flows are considered to be a source of *global imbalances* (massive and persistent current account deficits) and *sudden stops* (sudden reversals in net capital inflows).

6 Caballero and Krishnamurthy and Schembri, Santor, and Epstein (2009) argue that global current account imbalances caused the safe-assets imbalances, since emerging markets had limited ability to produce safe assets. However, during the crisis, the United States did not experience the feared sudden reversal in net capital inflows.

7 Securitization is the multi-stage process of turning cash flows from a pool of non-tradable (illiquid) assets into tradable debt instruments (Paligorova 2009).

8 A flight to liquidity occurs when investors sell what they perceive to be less-liquid or higher-risk investments and purchase more-liquid assets, such as U.S. Treasuries.

9 Gorton (2008a) and Ashcraft and Schuermann (2008) provide a detailed description of the stages of securitization and how asymmetric information problems were created in the process.

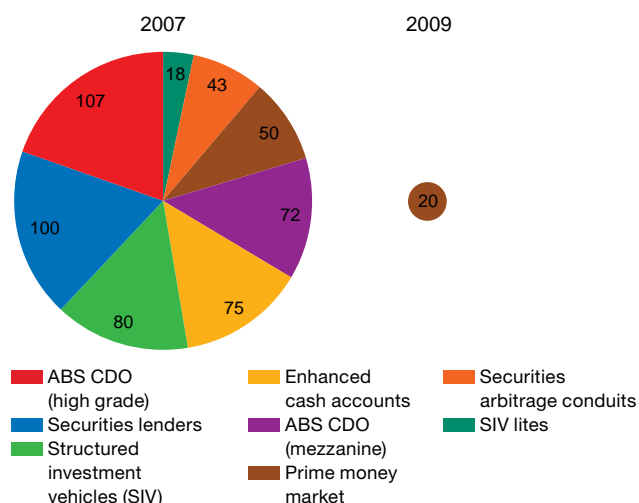
considered liquid: financial institutions believed that if they needed cash, they could sell these securities at a fair market price, because they were perceived to be safe and likely to yield a steady stream of payments. In 2007, defaults on subprime mortgages increased, and a large fraction of CDOs were downgraded.¹⁰ The impact of declining house prices on the securities depended on the composition of assets and mortgages that backed them. The complexity of structured financial products and the heterogeneity of the underlying asset pool gave their issuers an informational advantage in evaluating them.¹¹ Because of this asymmetric information, buyers did not know whether securities were being sold because of their low quality or because of the seller's sudden need for liquidity.¹²

Securitization brought new information asymmetries to financial markets because the complexity of the instruments and their lack of transparency made it difficult for investors to evaluate securitized assets.

The resulting adverse selection led to market freezes, reflecting buyers' belief that most securities in the market were of low quality. For example, during the crisis, the demand for asset-backed securities (ABS) in the United States collapsed from over US\$500 billion in 2007 to US\$20 billion in 2009 (**Chart 1**). The difficulty of evaluating these assets also resulted in a reduction in their ability to serve as collateral. Credit markets experienced considerable pressure: spreads widened significantly, and haircuts on collateral increased.¹³ In particular, the haircut on ABS, which was 3 per cent to 5 per cent in August 2007, increased to 40 per cent to 50 per cent in August 2008 (Gorton and Metrick 2009). In Canada, the amount of asset-backed commercial paper outstanding fell from about \$120 billion to about \$30 billion.¹⁴

¹⁰ For example, 27 of the 30 tranches of asset-backed CDOs underwritten by Merrill Lynch in 2007 were downgraded from a rating of AAA to "junk" (Covall, Jurek, and Stafford 2009).
¹¹ This problem was particularly pronounced for junior equity tranches, which were hard to value, since they were usually held by the issuing bank and were traded infrequently (Brunnermeier 2009).
¹² Drucker and Mayer (2008) find that underwriters of prime mortgage-backed securities appeared to exploit access to better information when trading in the secondary market. Elul (2009) also finds evidence of adverse selection in the prime mortgage market.
¹³ A haircut is the percentage by which an asset's market value is reduced for the purpose of calculating the amount of overcollateralization of the repurchase agreement (Gorton and Metrick 2009).
¹⁴ The reduction includes a \$33 billion restructuring into long-term assets by the Montreal Accord (Hendry, Lavoie, and Wilkins 2010).

Chart 1: Demand for asset-backed securities
US\$ billions



Source: Pozsar et al. (2010)

Market trading based on asymmetric information reduces the idiosyncratic risks of financial institutions, but it exacerbates systemic risk by increasing the likelihood of market freezes (Kirabaeva 2010). When the economy is in a normal state with strong fundamentals, asymmetric information does not significantly affect asset values. If the market is liquid, informed investors can gain from trading on private information at the expense of liquidity traders. But increased risk sharing often leads to increased risk taking by financial institutions, which may result in significant losses during a crisis when market trading halts. When the economy is subject to a negative shock, such as a decline in house prices, the value of these securities may become more sensitive to asymmetric information, and the resulting problems of adverse selection can cause market illiquidity. This supports the argument that the problem in the recent crisis was not only the lack of transparency in securitization, but also the sensitivity of the created securities to economic shocks (Holmström 2009; Stiglitz 2008).

Amplification mechanisms

How were the problems of adverse selection that originated in the subprime-mortgage market amplified and propagated to other financial markets? The market for subprime mortgages was relatively small, comprising only about 25 per cent of the outstanding amount in the US\$6 trillion mortgage-backed securities (MBS) market and about 30 per cent of total non-agency MBS issuance in the years before the crisis (Gorton 2008b). Direct losses from household defaults

on subprime mortgages are estimated to be about US\$500 billion, but the subprime crisis triggered losses in the U.S. stock market that reached US\$8 trillion in October 2008 (Brunnermeier 2009).¹⁵

In explaining the disproportionate effect of the subprime-mortgage crisis on the financial system, one can identify a number of amplification mechanisms that can significantly increase the initial impact of adverse selection: an increase in uncertainty about asset values, a flight to liquidity, and a misassessment of systemic risk.¹⁶ Increasing uncertainty about asset values contributes to the decline in demand for these assets, while a flight to liquidity and an underestimation of systemic risk cause a shortage of liquid assets in the market.

Uncertainty about asset values

Rising defaults on subprime mortgages and a lack of historical evidence caused an increase in market uncertainty about the impact of economic shocks on the value of financial securities. Because of the complexity and opaqueness of securitization, the size and location of expected losses were not fully known (Gorton 2008a). As the safest AAA subprime tranches experienced losses, investors started to question the valuation of all securitized products. This caused a dramatic increase in uncertainty and investor panic in all financial markets, not only in the subprime market (Caballero 2010).

Unlike an increase in risk exposure, Knightian uncertainty¹⁷ may cause investors to make decisions based on the worst possible outcome. In this case, the beliefs of market participants about the extent of adverse selection become crucial: if they believe that there may be too many low-quality assets in the market, then trading breaks down (Kirabaeva 2010).

The increase in uncertainty also made it harder to obtain accurate information about counterparty risk. As noted by Stiglitz (2008), “No bank knew what its own balance sheet looked like, let alone that of a bank to which it might lend.” If market participants are uncertain about the exposure of other participants to legacy assets, they disengage from trade, which leads

to asset fire sales and possibly market collapse. Moreover, when financial institutions are lenders and borrowers (or buyers and sellers) at the same time, gridlock can occur if they fail to cancel out offsetting positions because of perceived counterparty risk (Brunnermeier 2009).

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Flight to liquidity

The flight to liquidity that accompanies an initial economic shock can also amplify adverse selection into a severe financial crisis. The concept of liquidity can be divided into two categories: funding liquidity, the ease with which investors can obtain funding, and market liquidity, the ease with which an asset is traded (Brunnermeier and Pedersen 2009).

The higher preference for liquid assets during a crisis can be viewed as precautionary liquidity hoarding because of a tightening in funding liquidity. A higher preference for liquidity may alleviate the problem of adverse selection, since assets are more likely to be sold because the seller needs to raise liquidity rather than because of an asset’s low quality. Nevertheless, a higher demand for liquid assets also implies a lower demand for illiquid assets. If the demand for illiquid assets is sufficiently low, then the asset’s price will be determined by the liquidity available in the market rather than by the expected return on the asset (Allen and Gale 2004). Hence, an increase in liquidity preference can lead to fire-sale pricing and possibly to a market freeze.

Banks were exposed to market-liquidity risk through the maturity mismatch of their balance sheets: they financed long-term asset holdings with shorter-maturity debt. Because of the losses on their assets, some banks became undercapitalized; however, their attempts to recapitalize pushed the market price down further.¹⁸ Such deleveraging can further aggravate adverse selection by lowering the average quality of

¹⁵ According to an estimate by Bloomberg, cumulative reported losses across financial institutions from the second quarter of 2007 to the second quarter of 2009 were about \$1 trillion. These losses are expected to reach US\$2.8 trillion from 2007–10.

¹⁶ Kirabaeva (2010) develops a theoretical model that illustrates how even a small amount of adverse selection in the asset market can lead to market freezes if it is accompanied by an increase in liquidity preferences, an underestimation of systemic risk, and uncertainty about the asset’s value.

¹⁷ Knightian uncertainty refers to events with unknown probabilities. It is named after Frank Knight (1885–1972), who distinguished *risk* (events with objectively or subjectively known probabilities) and *uncertainty* (events where probabilities are unknown).

¹⁸ Brunnermeier and Pedersen (2009) explain this phenomenon, using a “loss spiral” and a “margin spiral.” A “loss spiral” arises when a decline in the value of the assets of a leveraged financial institution erodes its capital and therefore limits its ability to borrow. The “margin spiral” reinforces the loss spiral: the financial institution has to sell even more assets to reduce its leverage ratio.

the assets in the market. As margins and haircuts increase, lenders become more selective in their choice of collateral, which further contributes to the credit crunch.¹⁹

Market beliefs about systemic risk

During the recent crisis, market participants underestimated systemic risk, which exacerbated the impact of adverse selection in financial markets. They underestimated the extent to which these risks were correlated and overestimated the benefits of diversification. The structured securities rated AAA (even if correctly rated) were riskier than similarly rated stand-alone bonds, since the correlation between these securities and a systemic event was much higher (Coval, Jurek, and Stafford 2009). Overly optimistic ratings from credit-rating agencies further contributed to the underestimation of systemic risk (Gorton 2008a).²⁰

During the recent crisis, market participants underestimated systemic risk, which exacerbated the impact of adverse selection in financial markets.

Kirabaeva (2010) shows that adverse selection is likely to increase the severity of a crisis if systemic risk is underestimated. If crises are (or are believed to be) rare events, then financial institutions may not hold enough safe liquid assets to cushion the impact of a systemic shock when it occurs. Thus, an underestimation of systemic risk contributes to liquidity shortages, which can cause market freezes in the same way as a flight to liquidity.

¹⁹ Even financial institutions that were not exposed to maturity mismatch (such as life insurance companies and pension funds) were affected by declining asset prices. For example, changes in accounting standards have led to growing use of fair value accounting. As a result, the decline in asset prices reduced the value of assets on financial institutions' balance sheets and, hence, increased concerns about their capitalization and their ability to meet regulatory standards.

²⁰ One reason that the default risks of the underlying securities were underestimated is that the statistical models used were based on historically low rates of mortgage default and delinquency. Another factor was the potential conflict of interest: investment banks (arrangers) paid the rating agencies to rate the securities that they created. Banks were able to choose the most favourable rating, since the rating agencies were consulted at the design stage about the requirements for a desired rating level.

Policy Implications

Market inefficiency

Financial markets are efficient if market prices already reflect all known information.²¹ If there are information imperfections, however, a market equilibrium is not efficient, which implies that government policy could improve market efficiency.

In particular, the investment allocation is not efficient when financial markets are subject to two frictions: asymmetric information about exposure to systemic risk, and liquidity risk because of maturity mismatch (Kirabaeva 2010). In a market equilibrium, financial institutions overinvest in risky, illiquid assets (relative to efficient allocation), which potentially increases the severity of a crisis. Since asymmetric information reduces idiosyncratic risks, financial institutions invest more in risky assets. They do not take into account the effect of their investment choices on market liquidity, however, thereby creating systemic externalities. Because of adverse selection, more assets are offered for sale, particularly, more low-quality assets. Absorbing this asset trading requires more market liquidity. The systemic externalities provide a rationale for government intervention to alleviate a crisis and ex-ante regulation targeted to prevent market freezes.

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Policy responses during a crisis

The effectiveness of policy responses during crises depends on the cause of the market distortions. Kirabaeva (2010) demonstrates that if market freezes are caused by a shortage of liquid assets because of a flight to liquidity and an underestimation of systemic risk, then the provision of liquidity through open market operations can restore asset trading. However, if the breakdown of trade is the result of a large fraction of low-quality assets in the market or uncertainty about it, then liquidity provision is not efficient and leads to further liquidity hoarding.²² In this case, it is

²¹ Bauer (2004) describes different concepts of market efficiency and its importance for policy-makers.

²² Bernanke (2008) notes that traditional liquidity provision was inadequate for addressing the strains in short-term funding markets. For example, despite massive liquidity injections by the Federal Reserve, many over-the-counter markets continued to experience liquidity problems.

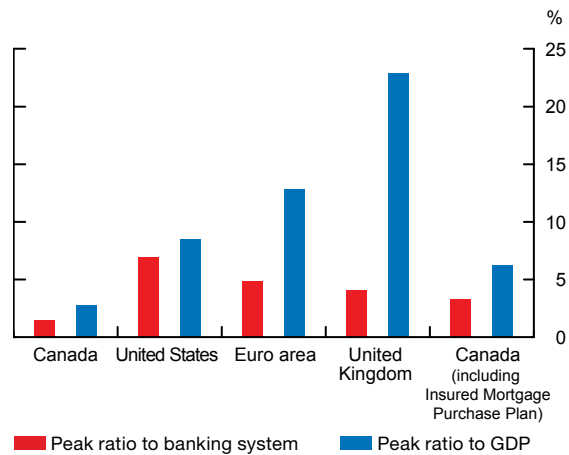
more effective to purchase legacy assets. Removing such assets from the market reduces adverse selection and uncertainty.

Troubled assets can also be removed by the direct injection of liquidity into financial institutions²³ and the creation of a “bad bank” (a closed-end fund to hold the toxic assets).²⁴ Governments can also introduce loan guarantees that reduce counterparty risks.²⁵ Even a government announcement about intended asset purchases at a later date can cause markets to function again (Chiu and Koepl 2010).

During the recent crisis, central banks in advanced economies intervened on an unprecedented scale. Central banks typically provide liquidity in times of crisis through open market operations. As interest rates started to approach the zero bound, however, some central banks used unconventional measures, such as providing banks with liquidity on extraordinary terms and at longer maturities and intervening in selected credit markets to support liquidity in secondary markets (Hannoun 2010). **Chart 2** illustrates the total liquidity extended in advanced economies relative to GDP. As a result, central banks’ balance sheets expanded significantly (**Chart 3**). For example, the Federal Reserve’s balance sheet exceeded 15 per cent of GDP in 2009, compared with 6 per cent of GDP in 2007 and 2008 (IMF International Financial Statistics). The Bank of Canada intervened to provide liquidity to financial institutions. It used traditional liquidity tools, such as the overnight rate, and developed new liquidity tools that included term purchase and resale agreements and a term loan facility (Zorn, Wilkins, and Engert 2009).

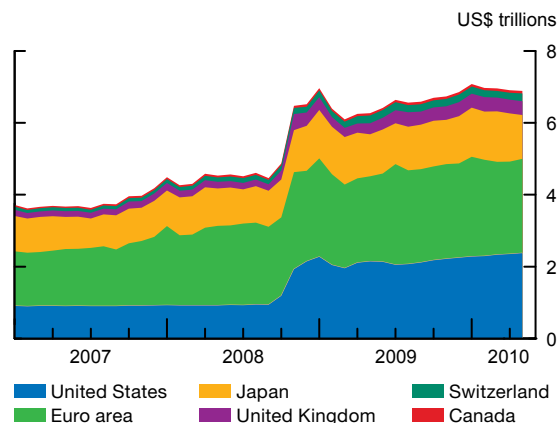
Government intervention during crises may create a moral hazard problem: if market participants anticipate such interventions, then their optimal holdings of risky assets are larger. Government bailouts (debt guarantees) can be inevitable during crises, and as a result, they lead to the inefficient allocation of capital towards risky investments.²⁶ The pre-emptive policy

Chart 2: Total extension of public sector liquidity



Notes: Liquidity extension refers to central banks’ liquidity-provision operations, as well as foreign currency swaps with other central banks.
Source: Bank of Canada

Chart 3: Central bank balance sheets



Source: Hannoun (2010)

response is an ex-ante requirement for larger holdings of safe assets (e.g., capital requirements), which offsets systemic externalities and reduces the probability of market breakdowns during crises (Kirabaeva 2010). Raising the quantity and quality of the capital base, as well as improving balance sheet liquidity, are important regulatory requirements for strengthening the resiliency of financial institutions. The Bank of Canada also supports the idea of “contingent capital,”²⁷ which can reduce moral hazard and increase the efficiency of capital allocation (Carney 2010b).

²³ This is consistent with arguments about the effectiveness of the Troubled Asset Relief Program (TARP). TARP was originally established to buy “troubled assets” from financial institutions in order to restore their financial solvency. Ultimately, the funds (US\$700 billion) were used for direct capital injections into financial institutions and for other purposes.

²⁴ Holders of problematic (“toxic”) assets sell them to the bank, which finances their purchase by issuing shares that entitle the owners to the cash flows generated by these securities. This helps banks improve their balance sheets and therefore their ability to raise private capital, since the toxic assets will no longer be a concern for lenders. One problem with this proposal is that bad assets cannot be removed from good banks without someone (i.e., the government) taking over the liabilities.

²⁵ For example, Philippon and Skreta (2010) show that government guarantees of new debt issuance are preferable to injections of equity and asset buybacks.

²⁶ Selody and Wilkins (2010) describe the principles established to mitigate the moral hazard that might have been associated with the Bank of Canada’s extraordinary liquidity interventions.

²⁷ Contingent capital allows a financial institution to convert debt instruments into equity when it needs to raise capital.

Concluding Remarks

The recent financial crisis has highlighted the importance of adverse selection as a contributing factor to financial market instability. Asymmetric information and adverse selection may prevent financial markets

from functioning efficiently during a crisis. The possibility of such market disruptions provides a rationale for government intervention to alleviate financial crises and for ex-ante regulation to ensure the continuous functioning of financial markets.

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