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Lessons from the Seven Years War

A banking collapse in Amsterdam rocked European financial markets in 1763. Isabel Schnabel and Hyun Song Shin draw parallels between that crisis and the events that brought down Long-Term Capital Management in 1998, concluding that liquidity risk was the fundamental weakness in both cases.

A financial crisis swept across northern Europe in 1763, which bears an uncanny resemblance to modern episodes of financial market turbulence. In particular, it mirrors the events of the autumn of 1998, when a severe liquidity squeeze culminated in the near collapse of the American hedge fund, Long-Term Capital Management (LTCM).

Although financial institutions looked very different in 1763, the crisis then shows many features that would be familiar to an observer today. Issues such as the role of high leveraging, liquidity drains in times of crisis and the intertwining of credit and market risk were all clearly evident in 1763. We see financial innovations that allowed nimble players to increase leverage in a buoyant financial market and amass rapid gains at the expense of increased fragility of the system. We see the final failure of these same players leading to fire sales of assets with all their repercussions.

From a theoretical perspective, the events of 1763 pose a challenge to our current models of financial crises. Banks in the 18th century were underdeveloped by today's standards. It was uncommon for them to take retail deposits, or to extend cash loans to the private sector. Their primary role was in the payments system associated with the trade in goods. The most prominent bankers were also merchants, hence the origin of the term "merchant banker". The 1763 financial crisis does not fall neatly into the textbook model of a bank run, where the main issue is the vulnerability of a deposit-funded bank with a maturity mismatch of liabilities and assets.

Agency-based theories that emphasise debtor moral hazard fare little better as an explanation. Holland was the main creditor nation at the time, home to plentiful capital accumulated during its heyday as the pre-eminent trading nation of Europe. Meanwhile, Prussia would be familiar to many bankers today as a typical "emerging market" debtor

country. Hamburg played an intermediary role between Amsterdam and Berlin, channelling funds and exploiting the interest rate differences that existed between Holland and Prussia.

However, in contrast to agency-based theories, the first wave of failures occurred in Amsterdam, followed by failures in Hamburg some two weeks later. The financial crisis in Berlin was severe, but it arrived several weeks after the crises in Amsterdam and Hamburg. More significantly, most of the merchant bankers that failed in Amsterdam and Hamburg were able to re-open their doors within months, suggesting that the crisis was one of liquidity rather than fundamental solvency.

The increased leverage in the balance sheets of the major market participants in 1763 was made possible by the development of bills of exchange. As their name implies, these first emerged as instruments to facilitate trade in goods. However, by the 18th century, they had evolved into a sophisticated instrument of credit – the “acceptance loan” – that allowed capital to be raised on the established financial centres of Amsterdam and Hamburg to finance trade and manufacturing in the newly emerging markets further east, such as Prussia.

Reputable bankers would make their own creditworthiness available by allowing other persons to draw bills on them, which could then be used for payments to third parties, or be sold on the bills market to raise capital. All the contracting parties’ interests were tied together through rigorously enforced laws on the transferability and negotiability of bills, which meant that contracting parties were better able to commit to repay. This commitment power had the virtuous effect of expanding the universe of possible contracts between interested parties separated by large distances. However, there was also a dark side. The interlocking sets of claims and liabilities bound many market participants together through their balance sheets, even though there were no underlying transactions in terms of trade in goods between them. The combination of highly leveraged balance sheets and interlocking claims and liabilities proved to be vulnerable to the downturn in economic activity that came with the end of the Seven Years War in 1763.

Just as LTCM took centre stage in the 1998 crisis, the events of 1763 are inextricably bound up with the exploits of one institution, the banking house of de Neufville Brothers. Like LTCM, de Neufville’s business practices were initially viewed with suspicion, but their apparent triumphs ensured their meteoric rise and produced many imitators.

The analogy runs deeper than simply the role of a prominent market player. Two features stand out. First, the increased size of balance sheets and the attendant increase in leverage was not viewed with alarm in 1763 because of the offsetting nature of the claims and liabilities. In modern parlance, the balance sheets were “perfectly hedged” to

the extent that each liability was exactly offset by an equal and opposite claim on another party. This is reminiscent of the convergence or arbitrage trades much favoured by modern markets.

Second, the contagious effects of the 1763 crisis were exacerbated by the forced sales of assets to meet liabilities. Merchants suffered direct losses when their counter parties went bankrupt, but they were also affected indirectly through the price declines resulting from the fire sales. The actions of distressed parties attempting to reduce the size of their balance sheets had an impact on the value of others’ assets. Weakened balance sheets generated further forced sales, feeding the vicious circle. The liquidity squeeze generated by such forced sales received particular attention in the aftermath of the LTCM crisis.

This second point underscores an important distinction. The modern treatment of bank runs emphasises the negative externalities on the liabilities side of the balance sheet: it is the run by depositors that precipitates the crisis. In contrast, the crises of 1763 and 1998 are instances of contagion on the asset side of the balance sheet.

There is, however, one important contrast between the events of 1763 and 1998. In 1998, the feared meltdown in the financial system prompted the intervention of the authorities (the New York Fed), which coordinated a buyout of LTCM by its main creditors. In 1763, there was no such intervention by the public authorities in Amsterdam. Although there were attempts to prevent the failure of de Neufville on the part of some of its counter parties, they did not muster enough support. The importance of timely intervention in crisis management (and the coordinating role of a crisis manager) is an important lesson to be drawn from this contrast.

The 18th century marked the slow, but steady, decline of the Netherlands as Europe’s dominant trading nation. Nevertheless Amsterdam remained the major financial centre of northern Europe, followed by London and Hamburg.

Following the example of towns like Venice, Seville and Antwerp, Amsterdam had developed financial institutions that were crucial to the city’s development as a global financial centre. The most important of these was the Exchange Bank of Amsterdam, which was a publicly guaranteed deposit and giro bank (i.e. a payments bank). Adam Smith’s *Wealth of Nations* has a celebrated description of the Bank of Amsterdam, which remains a classic exposition of the functioning of a giro bank in the 18th century. Accounts were kept in a notional currency, called bank money, the largest part of which was backed with the holding of gold or silver. By law, bills of exchange had to be settled in bank money by a transfer from one account to another. Due to the impeccable reputation of Amsterdam bank money, it soon emerged as the key currency in international finance.

Berlin was still a provincial backwater in the 18th century. Its second rung status as a financial centre was also reflected in prevailing interest rates, which were much higher than in Amsterdam and Hamburg. A network of wealthy merchant bankers in Amsterdam and Hamburg maintained correspondent relationships to other financial and trade centres. One important function of these bankers was the intermediation between these different centres. A need for such intermediation arose from the fact that loans were always based on personal relationships and there were few bankers with sufficient contacts and international reputation. The fact that a large part of Prussian trade ran through Hamburg also meant that commodities and other assets of the Berlin merchant passing through Hamburg could be pledged as collateral. Similarly, trade between Hamburg and Amsterdam had traditionally been strong. Hamburg bankers were, therefore, ideally placed to act as intermediaries between Amsterdam and Berlin.



The events of 1763 and 1998 were both bound up with the exploits of one institution

The Seven Years War and the emergence of Prussia as a regional power was accompanied by a shift in the centre of gravity in the growth in trade and manufacturing activity away from Amsterdam and Hamburg towards the interior. An important impetus for financial innovation was the challenge of finding ways to channel funds from established centres such as Amsterdam to the capital-hungry regions further east, especially Prussia.

For the cautious Amsterdam investor, lending money to an emerging market borrower in return for a promise of uncertain quality would be a risky undertaking, even when the Berlin merchant was commonly recognised to be sound. This is a dilemma familiar to investors in emerging markets in the 21st century. A large part of the solution came from the emergence of bills of exchange in the new role of acceptance loans.

Legally, a bill of exchange is an “order to pay” (like a modern cheque) rather than a “promise to pay” (like a modern corporate bond). Thus, in contrast to a modern creditor-debtor relationship, which involves a bilateral contract, there are typically at least four interested parties in a loan contract involving a bill of exchange: the drawer of the bill; the drawee of the bill; the beneficiary of the bill; and the holder of the bill.

Under the terms of a bill, the drawer requires the drawee to pay the beneficiary a sum of money at a given point in time. The bill carries the signatures of both the drawer and the drawee. By signing the bill, the drawee “accepts” the bill, thereby entering into the obligation to the beneficiary. Bills were negotiable instruments, freely transferable from one

party to another, and their transfer was governed by rules for transfer and settlement that were rigorously enforced across all the major jurisdictions.

In the context of the events of 1763, the cast of characters in a typical acceptance credit transaction would consist of the following parties: the drawer – a Hamburg merchant banker; the drawee – an Amsterdam merchant banker; the beneficiary / endorser – a Berlin merchant; and the purchaser / holder – an Amsterdam investor. In practice, the bill would in most cases pass through the Hamburg bill market, but would eventually end up in Amsterdam where most of the capital was. Bill traders could thus exploit the interest differences that existed between Amsterdam, Hamburg and Berlin.

The Amsterdam merchant banker would accept the bill on the understanding that the Hamburg banker would redeem the bill before the redemption date. Typically, the Hamburg banker would maintain a balance on his account at the Amsterdam banker, but this promise by the Hamburg merchant

banker could also be secured on collateral in the form of trading goods. The Amsterdam merchant bank would receive a commission for its service in accepting the bill. This commission typically was very small (around 0.3%), indicating that the incurred risks were judged to be negligible. For his part, the Berlin merchant promised to repay the Hamburg merchant banker before the bill's redemption date, so that the money could be passed on to the Amsterdam merchant banker in time. This promise would also typically be secured on collateral and the Hamburg merchant bank would receive commission from the Berlin merchant for its role in drawing up the bill. In addition, the Berlin merchant would have to pay interest when discounting the bill in the market. Since the bill was secured by the signatures of the Amsterdam and the Hamburg bankers, discount rates would be relatively low compared with the rates that the merchant would have to pay otherwise.

As a result of this sequence of transactions, credit has flowed from the investor in Amsterdam to the merchant in Berlin and the intermediaries have balance sheets in which the liabilities are exactly matched by claims on other parties.

On the balance sheets of the intermediaries, there is an increase on both the assets and the liabilities side, reflecting the increase in leverage. The Amsterdam merchant banker owes money to the holder of the bill, but this liability is matched by his claim on the Hamburg merchant banker. The Hamburg merchant banker also has an extended balance sheet in which the liability towards the Amsterdam banker is matched by a claim against the ultimate borrower

– the Berlin merchant. The intermediaries are remunerated for their increased leverage and credit risk arising from this transaction by the commissions received for drawing up the bill.

Acceptance loans were de jure short-term contracts, just like the traditional loans based on bills of exchange. De facto, they were often used for long-term borrowing as the bills were “paid” by drawing another bill, much like the modern practice of rolling over short-term loans for the financing of long-term projects. In times of crisis, however, the short-term nature of the contract became apparent, with the bill market drying up completely.

In reality, of course, transactions were much more complicated than the stylised picture given. The chains of interlinking obligations were typically much longer, because bills were heavily traded at exchanges. In particular, Hamburg bankers participated very actively in the trading of bills, trying to benefit from the difference in interest rates across markets. In Berlin, too, there would be merchant bankers intermediating loans, just as there also were merchants in Hamburg and Amsterdam in need of financing and investors in Hamburg and Berlin. But the stylised transaction described illustrates the overall direction of capital flows and the nature of the interlinking obligations.

Besides the claims and liabilities “above the line”, the parties to such transactions were also subject to contingent liabilities and claims that were “below the line”. These arose from the strict legal provisions for the transfer and negotiability of the bills, which had two key planks: endorsement and *Wechselstrenge*.

The practice of endorsement has survived to today in the regulations governing the settlement of cheques. The beneficiary of the bill could sell the accepted bill in the open market after adding his signature to the bill (thus “endorsing” it). Indeed, any subsequent owner could endorse the bill and sell it on the open market. However, such a transfer was not final. Even after the sale, the new holder of the bill had a contingent claim on the other signatories of the bill in the event that the original drawee was unable to pay. If the drawee was unable to honour the bill, then the drawer and all endorsers of the bill became jointly liable. In effect, when the beneficiary sold the bill by endorsing it, he was selling the claim on the drawee within a “credit insurance wrapper”. The seller of the bill was promising to insure the buyer of the bill against default by the drawee.

The economic rationale for the institution of endorsement is clear. By maintaining a contingent liability, the practice of endorsement was designed to guard against the passing on



Both crises are instances of contagion on the asset side for the balance sheet

of lower quality or fraudulent bills. Also, the fact that all signatories became jointly liable greatly reduced the informational costs related to seeking recourse against default. If, by contrast, there were a strict sequencing of liabilities, the bill would be far less attractive, since the informational demands on demonstrating the insolvency of those higher up the list before claiming redress on one of the signatories would entail delays and uncertainties. There would also be the potential for collusion between sub-groups of the signatories and the drawee.

The second plank of the legal enforcement provisions for bills was *Wechselstrenge*, analogous to what is known today as the “holder in due course” provision in US and UK law. It stipulated the legal separation of the obligation related to the bill from any underlying commercial transaction between third parties. It thus ensured that claims from bills of exchange were enforced quickly and rigorously.

Suppose that our Hamburg banker (the drawer of the bill) had repaid our Amsterdam banker (the drawee of the bill) prior to the maturity of the bill, but that the Amsterdam banker went bust before the bill was redeemed. Then, the holder of the bill had the right to take the protested bill to the Hamburg banker and demand payment, since the legal claim of the bill was in force as long as the bill was outstanding. Thus our Hamburg banker was being asked to “pay twice” for the same bill – once to the (now failed) Amsterdam banker and once to the owner of the bill. This feature of *Wechselstrenge* is the key to understanding the dynamics of the crisis in 1763. The “holder in due course” provision remains a lively topic of debate with the advent of the Internet and the status of digital signatures.

The Seven Years War brought an economic boom not only to the neutral states, such as Holland and Hamburg, but also to states involved, such as Prussia. This boom was accompanied by a strong expansion of credit through bills of exchange. At the same time, inflation became a widespread phenomenon in northern Europe, as many German states and other countries, like Sweden, financed the war by debasing their currencies. Rapid price changes and uncertainty formed the backdrop to speculative activities, often carried out on the basis of bills of exchange by people with little capital of their own.

Not everybody profited from the war boom to the same extent: huge gains could be made in the money trade, which became more and more popular among merchant bankers, or in the trade of war goods and exotic goods from the West Indies. However, these profitable activities also were

the most risky ones, as the price volatility of exotic and war goods was particularly high. In addition, trade in exotic goods necessitated expensive investment in shipping (much like the capital intensive telecom equipment industry today), so that traders in these goods were particularly vulnerable to a fall in prices.

The key advantage enjoyed by de Neufville and other Amsterdam banks was their base in a mature financial market with an effective legal infrastructure. Although Hamburg bankers may have been wealthy enough to lend directly to the borrowers in Berlin and elsewhere, the range of services that de Neufville was able to offer – such as access to the Amsterdam bills market – was certainly valuable. Likewise, commentators on modern markets in credit default swaps and other instruments observe how the larger international banks that can offer credit as well as investment banking services (such as Deutsche Bank, Citicorp Salomon Smith Barney, or J. P. Morgan Chase) have a competitive advantage over the specialised investment banks.

The banking house of de Neufville was founded in 1751 by Leendert Pieter de Neufville, who was 21 at the time. It was no more than a medium-sized firm at the beginning the war in 1756. However, by taking full advantage of the opportunities that the buoyant war economy provided, it was catapulted into being one of the richest and most prestigious banking houses of Amsterdam. De Neufville's balance sheet reveals an extensive range of projects – in manufacturing, goods trading, shipping, insurance and other financial activities. Thus, as well as being a banker acting as guarantor of loans (i.e., being the drawee of bills), de Neufville was a debt-financed entrepreneur in its own right.

The glamour and fascination associated with such success would be familiar to contemporary observers of the excesses of the late 1990s' bull market. Leendert Pieter's opulent lifestyle was the subject of much comment and gossip. The furnishings of his house were said to be of the finest quality, including chests of drawers made from walnut wood, a drawing room from yellow silk, and a fine collection of paintings. He owned several coaches, horses, a yacht and a manor, but (reputedly) not a single book.

De Neufville's commercial interests were wide, both in the range of goods he traded in and in the wide geographical spread of his business activities. After the conclusion of peace in February 1763 (the Peace of Hubertusburg), de Neufville was party to a major speculative deal with the Berlin merchant banker, Gotzkowsky, who was the pivotal financier and entrepreneur in the Berlin of the day.

The deal involved buying up a large quantity of grain from the departing Russian army in Poland. The purchase price was 1 million Dutch guilders. It should be borne in mind that any bank with capital of 1 million guilders was considered to be a large bank in Amsterdam at the time. The largest

Amsterdam bank, Hope & Co. (which survived the crisis largely unscathed) had a total capital of 4.3 million guilders in 1762.

Grain prices then collapsed in Berlin, falling more than 75% between May and August. Of course, the merchants had known that the end of war would bring about a decrease, but a drop of such magnitude could hardly have been expected. Although de Neufville's equity stake in the project was small (only 6%), the fallout from the crash in grain prices may have been much larger. The details of the financing of the deal are not well documented; but if, as is likely, de Neufville had financed a substantial part of the deal for his partners by extending acceptance loans himself or by drawing bills on other Amsterdam bankers, the losses resulting from the Berlin grain price collapse would have been substantial.

These events affected market participants in two ways. First, falling prices depressed the values of their asset portfolios. Second, it became harder and harder to obtain new loans needed to roll over existing debt. The tightening of the credit market shows up clearly in the levels of discount rates. Discount rates in Amsterdam in normal years had been in the range of 2 to 3%. Now they rose above 4% and fluctuated wildly. The Hamburg credit market showed similar signs of distress, with discount rates of up to 12% instead of the normal 4%. The tight credit markets forced merchants and merchant bankers to sell their assets, such as grain and sugar, to obtain the liquidity needed for the repayment of maturing bills.

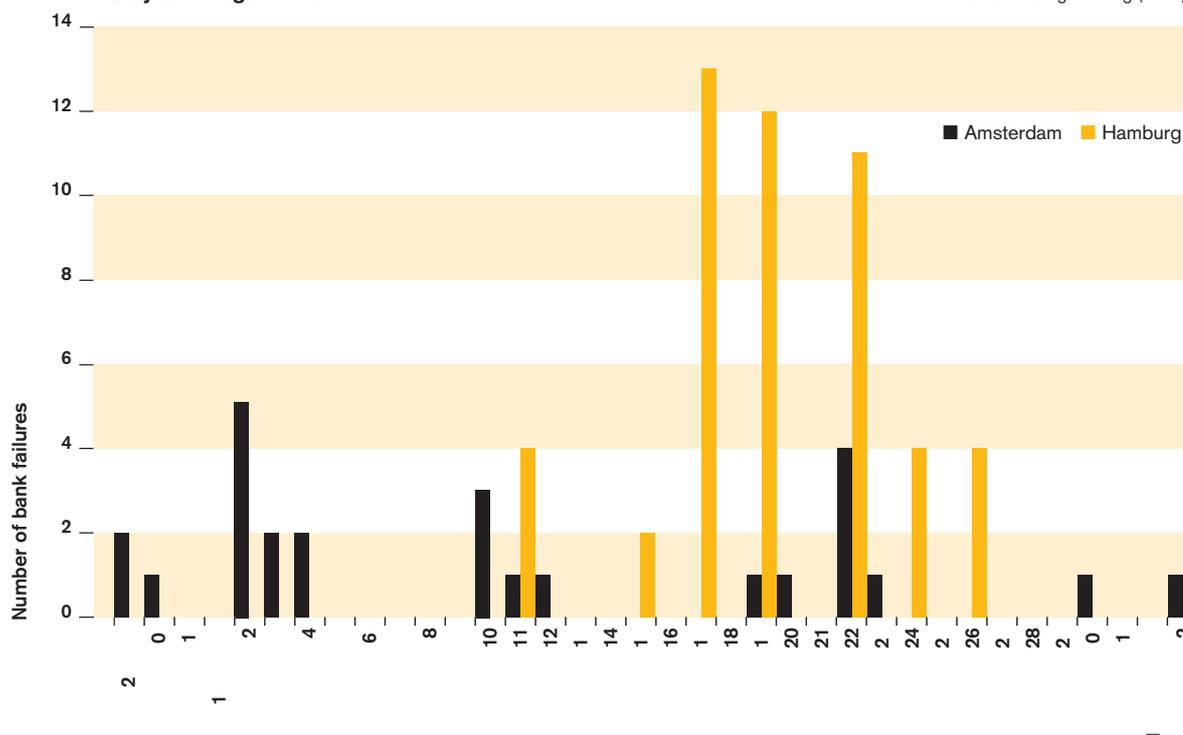
The crisis finally came to a head in Amsterdam on July 29. The first to fail were the Amsterdam houses of Aron Joseph & Co. and, most spectacularly, de Neufville. Some bankers attempted to organise support for de Neufville, but this attempt met with strong opposition from traditional banking houses. The two failures were immediately followed by others in Amsterdam, not only speculators, but also some of the old-established banking houses, which had been creditors of de Neufville.

Two weeks later, on August 11, there was a first wave of bank failures in Hamburg. This was in spite of the frenetic activity on the part of Hamburg merchant bankers to organise an officially sanctioned bailout of the failed bankers in Amsterdam. These failures in Hamburg were in turn followed by a second wave of failures in Amsterdam, which were attributable to those in Hamburg (see Figure 1 overleaf).

The propagation of the crisis followed the links established by the tight web of bills of exchange. When de Neufville and other Amsterdam houses declared themselves bankrupt, the bills drawn on them were protested immediately and presented to the endorsers or drawers of the bills. Due to *Wechselstrenge*, the Hamburg bankers could not refuse payment, even if they had already sent

Figure 1. The number of failures in Amsterdam and Hamburg in July and August 1763.

Source: Jong-Keesing (1939)



remittances to the Amsterdam house to settle the obligations from an acceptance loan. Many Hamburg banks were thus forced to close down.

In turn, Berlin bankers received protested bills from Hamburg and so the wave of bankruptcies spread contagiously from Amsterdam to Hamburg, Berlin and other places. In the end, more than one hundred banks succumbed to the crisis, most of which were located in Hamburg.

In Berlin, the number of initial failures was relatively low. This was due to the fact that Friedrich II – in violation of *Wechselstrenge* – imposed a payments standstill on outstanding bills and even organised outright bailouts. However, many of the Berlin bankers who had just averted bankruptcy in 1763 collapsed in the following depression.

In Amsterdam and Hamburg, there was no direct public intervention, but the giro banks tried to fight the liquidity crisis through the extension of additional Lombard loans. However, the banks' hands were tied by the provision that the ratio of bank money to gold and silver holdings should be kept close to one, so their support was but a drop in the ocean.

A natural place to search for the culprit for the 1763 crisis, according to the current literature on financial crises, would be the agency problems generated in the credit relationship

and the moral hazard on the part of the ultimate borrowers. However, a striking feature of the crisis of 1763 was the sequence in which the main protagonists encountered difficulties. The first to fail were the Amsterdam houses, followed by the Hamburg bankers some two weeks later, while the ultimate borrowers in Berlin were initially spared from widespread failures.

The crisis was followed by a period of falling industrial production and a stagnation of credit in northern Europe. The Amsterdam financial market was the first to recover from the crisis. Many banking houses that had been declared bankrupt re-opened shortly after the crisis. Those houses that proved to be insolvent, such as de Neufville, were allowed to fail. In the end, a large part of the debts outstanding could be repaid, notwithstanding the high number of initial failures. In spite of the abuse of the system by de Neufville and others, there do not appear to have been any modifications to the laws governing bills of exchange.

In Hamburg, too, many banks that had closed during the crisis reopened for business. However, bankers and merchants became much more cautious in their financial affairs and there were no further serious financial disturbances until 1799.

The biggest impact of the crisis was on Berlin. The bank failures in Amsterdam and Hamburg, and probably also the Prussian departure from *Wechselstrenge*, precipitated a

severe credit crunch, provoking numerous bankruptcies in the corporate sector. The situation was exacerbated by the coin reform enacted at the end of the war, which produced a drastic tightening of the monetary base. Prussia plunged into a deep and long-lasting recession, which culminated in a second wave of bankruptcies in 1766. Many of the bankers who had just averted bankruptcy in 1763 finally collapsed at that point.

The observation that many banks in Amsterdam and Hamburg re-opened after the crisis indicates that the underlying problem of the crisis of the banks was one of illiquidity and not of fundamental insolvency. This is an important ingredient in our stylised model of the crisis. The main insight from our model is that, in a liquidity crisis, goods whose prices are uncorrelated in normal times become highly correlated due to forced distress sales of market participants. Contagion works through the combination of direct interlinkages between agents and generalised price declines induced by fire sales, which can cause the failure of agents that would be solvent in the absence of liquidity risk. The detailed description of this model can be read in our paper "Foreshadowing LTCM: The Crisis of 1763" (see <http://www.nuff.ox.ac.uk/users/Shin/working.htm>).

In the paper, we confront this "distressed sales hypothesis" with the empirical evidence. It confirms that there was a dramatic collapse in the prices of commodities that were prime speculative instruments for the largest players in the market at the time. Such dramatic declines are hard to attribute simply to the underlying macroeconomic fundamentals of the economy, albeit one that was entering a period of peace. It seems reasonable to attribute part of this price collapse to the unwinding of speculative positions, much of it under distressed circumstances. In addition, correlations of commodity prices increased across goods in Amsterdam, Hamburg, and Berlin. We conclude that the evidence from prices is consistent with the "distressed sales hypothesis" developed in our model.

It remains to show the impact of the evolution of prices on

individual balance sheets. We are fortunate in that Jong-Keesing provides a snapshot of de Neufville's balance sheet at the time of bankruptcy. We also have bank money holdings figures for June 30 1763. This was a full month before the failure of de Neufville, but by this time, the full force of the price collapse in Berlin grain prices will have taken its toll.

Table 1 gives some summary statistics for three banks in Amsterdam. We can compare de Neufville's balance sheet with two other banks – Grill & Zonen and Hope & Co. These two banks are representative of two classes: those that failed, but re-opened their doors some months later, and those that did not fail. Additionally, we report the averages for the failed banks in Jong-Keesing's sample, distinguishing between those that re-opened and those that did not. In reading the table, it should be borne in mind that the denomination for a bill was typically around 2,000 guilders and its maturity no more than 3 months.

The most striking feature of de Neufville's balance sheet was the low level of liquidity, as measured by the ratio of bank money at the Bank of Amsterdam to the total liabilities. As compared with Grill & Zonen, de Neufville's liquidity was only 1/40 as large. As compared with the overall average of failing banks in Amsterdam, de Neufville's liquidity was 1/18.

As another measure of liquidity we can examine the size of bank money holding as a proportion of the number of bill transactions. De Neufville's holding of bank money at the Bank of Amsterdam at the end of June 1763 had dwindled to about the same amount as it had in 1751. Meanwhile, the number of bill transactions had increased by a factor of 14. Hence, the ratio of bank money holdings to the number of bill transactions was below 6 at de Neufville, while at Hope & Co., this ratio was well above 300.

The snapshot of de Neufville's balance sheet at the end of June betrays all the symptoms of a leveraged trader in distress. The wafer thin level of liquidity would have compelled the distressed sales of assets, especially the

Table 1. Balance Sheet Snapshot

	Individual banks			Full sample of failures (average)	
	De Neufville	Grill & Zonen	Hope & Co.	(21 failures) (re-opened)	(16 failures) (not re-opened)
Failure date	30th July	4th August, re-opened	Did not fail	Various dates, re-opened	various dates, not re-opened
Bank Money as at June 30th (Thousand guilders)	8	120	793	15	3
Total liabilities at failure date (thousand guilders)	9,643	3,000	n.a.	669	802
Liquidity (= bank money/total liabilities)	0.1%	4.0%	n.a.	2.1%	1.5%
# of bill transactions (first half of 1763)	1,395	777	2,151	241	255
Recovery rate (= accord at court of bankruptcy)	11%	70%	–	43%	10%

liquid assets such as grain and, thereby, contributed to the sharp fall in the Berlin grain price. This fits well with the evidence from Jong-Keesing that many merchants were forced to sell their goods in public auctions at very low prices in order to stay liquid and supports our view that distressed selling by merchants exacerbated the downward movement of prices. Unfortunately, the available data does not allow us to directly establish the link between falling prices and the banks' balance sheets.

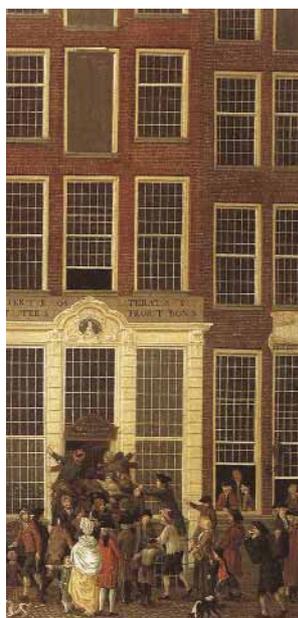
The crisis of 1763 foreshadowed many of the events surrounding the turbulence in financial markets in the summer and autumn of 1998. Contrary to some popular accounts of the LTCM crisis, which emphasised the mystique surrounding modern financial theory, we claim that the main themes are rather timeless and that the essentials of the LTCM crisis are well illustrated by its 1763 predecessor.

There is now a large literature on the origins, personalities and the trading strategies employed by LTCM. Its vulnerability arose from its extremely high leveraging. Jorion (2000) estimated LTCM's leverage to be around 25 at the beginning of 1998, rising rapidly to over 50 at the height of the crisis as it suffered dramatic losses on its portfolio. In the end, the New York Fed managed to organise a collective rescue by fourteen of LTCM's major creditors and counter parties, which prevented a disorderly unwinding of the fund's positions and further failures.

Neither the 1763 nor the 1998 crises fit the traditional models used to explain financial crises. In both cases the institutions involved were not deposit banks, financed through demand deposits with sequential service constraints. The borrowing of de Neufville and LTCM was at maturities of several months; in addition, at LTCM investors' capital was locked in for a minimum of three years.

Neither crisis was precipitated by nervous investors who suddenly withdrew their money. The institutions' creditors do not conform to the picture of many small, uninformed individuals that usually appear in such stories. Rather, the creditors and counter parties were a small number of wealthy and sophisticated market participants who were able, and who had an incentive, to monitor the debtor due to the large sums involved.

In addition, the managers had a lot to lose. First, they stood to lose their capital. In 1763, there typically was no separation between the manager and the owner, and the owner was liable with his entire wealth. In 1998, it was common that fund managers received large incentive fees and that they put a substantial amount of their own wealth in the fund.



There are limits to how much risk can be effectively hedged

Worse, the bank or fund ran the risk of losing future rents (the "charter value"), which presumably were quite high due to the reputation built up in previous years. This is even clearer in the 1763 case, where barriers to entry in the financial market were high. In addition, the non-payment of bills was drastically penalised, often by sending the debtor to prison. Finally, there was no reason to believe that a bank or a hedge fund would be bailed out in case of a crisis. Amsterdam was very much a free-market environment in the 18th century and official interventions were unthinkable. We have to turn to alternative explanations of the two crises.

Liquidity risk appears to be at the core of both of them. We see a drying up of liquidity in the market, forcing distressed agents to sell their assets at prices below their fundamental values. In 1998, it seems clear that the high spreads observed in financial markets cannot be explained by credit risk alone, but have to be attributed at least partly to liquidity risk.

Assets that used to be uncorrelated in normal times, suddenly showed a high degree of correlation as traders were forced into liquidating their portfolios. The fact that many traders had accumulated similar positions meant that such liquidations had a detrimental feedback effect on other traders' portfolios. The feedback effect also lowered the value of collateral assets, which magnified the financial distress further. When the New York Fed organised LTCM's rescue by its creditors, it was for fears of systemic repercussions. First, LTCM's counter parties would incur direct losses, as their contracts remained unfulfilled. Second, a disorderly unwinding of LTCM's positions would lead to an even stronger downward movement of asset prices, which would affect even those banks with no direct relationships with LTCM. This danger was amplified by the fact that many other firms had followed very similar strategies as LTCM and were thus subject to the same risks. It seems that these were not so much other hedge funds, but were the proprietary trading desks of large banks.

With the 1998 crisis, we do not know whether there really was the danger of a systemic meltdown. Some recent literature has suggested that the fear might have been exaggerated. But, in the case of the 1763 crisis, we can see what happened in the absence of such a rescue. There was a complete breakdown of the financial system, spreading as far as Sweden and England. The crisis was followed by a period of falling industrial production, a stagnation of credit activities in the whole of northern Europe and further bank failures, especially in Prussia.

This indicates that a systemic meltdown is a real possibility in a situation where banks are connected through interlocking obligations and, in addition, have very similar trading positions. "Hedging" and collateral lose much of their reliability when market and credit risks are correlated and this has to be taken into account in risk management.

We draw two policy conclusions from the events of 1763 that have wider significance:

■ There are limits to how much risk can be effectively hedged. Aggregate risk inheres in the financial system even though each individual trader may believe that his own risks have been hedged. At the critical moment, the tensions finally manifest themselves in the form of increased co-movement of prices and the increased correlation between credit risk and counter party risk. The overconfidence in financial engineering was as dangerous in 1763 as it is today.

■ Liquidity risk can have a devastating effect on a financial system populated with traders with highly leveraged and similar balance sheets. As one trader attempts to repair his balance sheet by disposing of assets, the negative price effect of this action impacts on the balance sheets of all other traders in the financial system. This negative feedback has the potential to trigger a self-fulfilling flight to liquidity and the consequent damage to potentially healthy balance sheets. In distressed market conditions, traders that are intrinsically solvent may nevertheless be pushed into failure.

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