The Midas Touch

Banking arose as a means to facilitate payments. That remains its vital function. However, most banks focus more on borrowing short to lend long. This exacerbates the fluctuations of credit spreads and debt, which we can view as a kind of predator-prey game. Regulators have exacerbated systemic risks by prizing nominal safety over liquidity.

A grateful Bacchus, the god of intoxication, offered King Midas a reward of his choosing. Midas, likely intoxicated himself, asked that everything he touched turn to gold. It was a tragic error. What makes gold money is the ease of transforming it back into commodities. What Midas thought he gained he really lost.

Ever since, finance has sought to perfect the Midas touch. Imbue everything with “moneyness” simply by easing resale. Then extract a broker’s fee for these services, or trade on speculation about future moneyness.

This intermediary role is both useful and suspect. Making assets more liquid gives more options to asset owners. They feel wealthier and will likely invest more. Yet liquidity can’t do more than swap one material form for another. Brokers appear to leech on the interactions they foster.

At its best, finance cultivates confidence. It encourages people to trust the social division of labor and tap into it. At its worst, finance cultivates too much confidence, which then implodes into despair. Ironically, the financial regulations intended to tame booms and busts often serve to aggravate them.

This chapter explores the trade-offs. We will see how payment needs give rise to banking and how banking multiplies credit. Credit inflows
reduce current default risks and bid up wealth in ways that are hard to distinguish from improvements in economic fundamentals. Conversely, credit outflows are hard to distinguish from fundamental economic deterioration.

Payment Systems

The usefulness of finance is most evident in large or remote payments. If we had to cart around all our money with us, protect it from theft, prove its legitimacy, and deliver it personally to vendors, the extra care would quickly wear us out. Banks arose to facilitate payments. Deposit money at one location and have the bank deliver the payment somewhere else.

The first bankers were money changers, who charged commissions for payments as they would for other exchanges. Measured as interest rates over time, the commissions generally exceeded 2% a month. It was more the liquidity the customers paid for than the deferral. The payments could be secured by either deposits or by goods in transit. Islam, which prohibits all outright interest on debt, has long been tolerant of trade finance.

Payment efficiency can be enhanced through aggregation and netting. If the goods shipping from London to Paris roughly balance in value the goods shipping from Paris to London, relatively modest inventories of money or liquid commodities can secure payments in both directions. With crisp accounting and reliable servicing, liquidity extends in time and space.

However, netting mingles credit risks. In a long chain of transactions, a single payment failure can put all at risk. It would be safer to insist that all accounts cover contracted payments and confirm that through immediate debit. Modern information technology makes that feasible at low marginal cost via giro accounts, direct debit, debit cards, and real-time settlement.

For most of banking history, debit clearing wasn’t feasible, so the payment system evolved other methods of insurance. An early innovation, dating back to Roman times and still widely used in the United States, is the check. While a check is a promise to pay rather than payment itself, it acknowledges an obligation independent of other claims. This facilitates enforcement and invites third parties to add insurance. Notably, the bank that handles the payer’s accounts might offer its own check, or a letter of credit that guarantees trade payments subject to proof of shipping.

Banks insure payments out of their own capital or the capital lent by others. As bank capital is hard to verify, banks cultivate reputations for
caution and probity. Regulatory oversight and backing helps reassure customers. Still, bank capital remains the primary guarantor of credit risk. The ratio of debt outstanding to capital is known as the leverage ratio.

Nowadays many banks treat payments as mundane. Lending is where the action is. Sometimes banks will handle payments for free, just to get hold of money for loans. However, if an economy had to choose between two poisons, suspension of loans wreaks far less havoc than breakdown of the payments system.

One reason the former Soviet Union suffered so much in the early 1990s is that its payment system was geared to a slow ex post accounting among thousands of state enterprises. It couldn’t handle millions of people suddenly seeking direct access to payments. As parts of the economy reverted to barter and other parts switched to dollars, the ruble lost value. This aggravated the cost of payment system delays and compounded the downward spiral.

While payment systems in developed market economies are far more technologically sophisticated, they can be sloppy in handling credit risk. Lehman’s giant London-based brokerage provided a ruinous example when the parent firm failed in September 2008. While clients regarded the brokerage as the custodian of their assets (as it would have been under domestic U.S. rules), U.K. bankruptcy law treated the accounts as unsecured loans to Lehman. Panicked by the seizure, many investors closed out other securities accounts for safety, while lending against securities collateral temporarily dried up. This exacerbated the plunge in stocks, triggering margin calls that further strained liquidity.

Duration Mismatch

The safest payment systems require each payer to hold a positive money balance at all times, sufficient to settle any obligation coming due. For banks to provide similar guarantees to their customers, they must hold all demand deposits in short-term assets or cash reserves. Financial institutions that want to make longer-term loans will then have to secure longer-term funding.

Policies restricting banks in this way are known as narrow banking. Narrow banking has some illustrious proponents, including Simons (1934), Fisher (1935), Allais (1948), Friedman (1959), and Black (1985). Every great financial crisis tends to revive discussion; see Bossone (2002) for a thoughtful
review. Clearinghouses and postal savings systems can be viewed as narrow banks. There are also analogues in Islamic banking (Al-Jahri 2004).

Banks rarely choose this path on their own. It is easy to see why not. Most bank customers maintain adequate liquidity for most transactions, without being forced. Since most calls for liquidity are effectively random, the individual reserves usually sum to excess reserves on aggregate.

Most of the time banks can lend out excess reserves without depositors feeling a pinch. Indeed, depositors may welcome this. The banks’ profit on the loans and investments may subsidize payment services or boost interest paid on deposits.

“Duration,” in financial parlance, refers to the weighted-average time of payment, with weights proportional to net present value (NPV). Deposits average much shorter duration than loans. Duration mismatch allows banks to create money. Banks prize that ability so much that many people think the prime function of banking is to “borrow short and lend long.”

Like fiat money or debt repaid through rollover, duration mismatch adds to perceived wealth. Whether it adds to real wealth or simply inflates a bubble depends on context. Individual bank customers can rarely tell the difference. Flows from different sources are typically so interwoven that even experts find it hard to distinguish real wealth from masquerade.

To better appreciate the difficulty, consider the following thought experiment. A small volcanic island forecasts prodigious future wealth through high productivity growth, savvy entrepreneurship, and geothermal reserves. Borrowing in anticipation, it accumulates the highest per capita debt in world history and distributes the proceeds generously among the islanders. Within a decade the island’s net debt is over six times GDP. However, domestic growth and islanders’ holdings abroad are soaring, so perhaps current GDP is not a good benchmark. How truly sustainable is its debt?

If the government accumulates all the debt, it will be immediately suspect. The forecasts will seem too self-serving and other lenders’ confidence too fragile. Realistically, most lenders will already have backed off, capping debt at much lower levels.

Suppose instead that most of the debt is accumulated by three government-owned banks on the island and by households who borrow from the banks. Thanks to rapid domestic growth and markups on foreign acquisitions, the banks report huge profits and a swelling capital base. This will likely instill more confidence in rollover. At least it should until analysts aggregate the accounts and form the same consolidated balance sheet as before.
To obscure this, let us restructure the island’s banks so that they are private rather than state owned. Have them fund themselves mainly through deposits from households abroad, which they attract through Internet-based payment systems and premium interest rates. Keep banks’ earnings margins positive by betting on the government’s successful defense of a reputedly overvalued domestic currency, on a domestic housing and equities boom, and on an economic boom abroad. Keep the accounting sufficiently murky that analysts have to focus on the bottom line. Now the debt burden will look more sustainable.

Doubters should study Iceland. A country of barely 300,000 people, well integrated into the OECD and briefly one of its richest, would not appear difficult to monitor. Its economy underwent profound liberalization and reaped years of heady growth. In 2006, when financial markets started getting nervous about Iceland’s huge current account deficits and bubble-like growth, a close colleague of Fed chair Ben Bernanke reviewed its finances and pronounced them sound (Mishkin and Herbertsson 2006).

Yet in 2008 Iceland’s banking system—basically the central bank and three private ones—defaulted on the most debt per capita in history. The victims included nearly half a million retail depositors in the European Union and some of the world’s leading investment banks. The Iceland stock market index, which had sextupled from 2003 to 2007, was essentially wiped out (Figure 5.1).

Too Good to Stay True

Like all crises, Iceland’s was exceptional. Better luck, wiser oversight, or swifter response might have contained it. Nevertheless, it fits a broader pattern. The biggest crises start with things that are genuinely good and keep getting better, until eventually things become too good to stay true. Swings in financial leverage aggravate the boom and bust.

The core problem is our usual one. No market can pierce the veil of the present and measure output that has not yet been produced. It can only assess what was, what is, and what is believed will be. Good news makes the market more optimistic. Optimism raises valuations and lowers risk premia, adding more good news. While there are negative feedback loops as well, they don’t operate as quickly and smoothly as we would like. The bolder and more justified the consensus shift appears, the more likely it is to overshoot.
In the late 1860s, the North’s victory in the U.S. Civil War, the formation of the Austro-Hungarian Empire, and Bismarck’s unification of Germany gave big boosts to capitalist development. The United States extended railroads west, brought new lands under cultivation, and flooded central Europe with cheap grain. Speculative railroad bonds sucked in British capital, encouraging rapid expansion. In central Europe, mortgage lending triggered a real estate boom, which encouraged more borrowing despite the erosion of competitiveness relative to the United States. After shrugging off several financial scares, markets were overwhelmed in the Panic of 1873. A severe depression engulfed the United States and Europe, with profound economic and political consequences (Nelson 2008).

An even bigger boom started in 1922 in the United States. Reviving after an unprecedented world war, upheaval across Europe, and sharp domestic contraction, the U.S. boom seemed to put the past behind. As David (1991) emphasizes, electrification and the internal combustion engine revolutionized industrial production and demand. Allowing machines to detach from large fuel reserves enabled assembly-line manufacturing and massive shifts in settlement and transportation patterns. Factor productivity in U.S. manufacturing grew faster than ever before.
Meanwhile, easy money and the spread of installment financing sparked a credit boom. Between installment loans, mortgages, and stock purchases on margin, total private credit in the United States was 410% of GDP, versus 240% in 1913. The corresponding expansion in the United Kingdom was even greater. Eichengreen and Mitchener (2003) call the Great Depression a “credit boom gone wrong.”

Today the world is grappling with an even bigger boom gone wrong. The boom was founded on Pax Americana, a strong market orientation, the information revolution, resource abundance, and disinflation. A generation of strong growth naturally bred expectations of continuation. This drove up asset values worldwide and encouraged leverage. However, the dynamics varied considerably with the emphasis on investment or consumption. Conceptually we can distinguish a “Saveland” and a “Spendland”:

- Saveland is fearfully diligent. It continually socks away surpluses for rainy days, rainy years, epoch-making floods, and influence over potential rivals. To keep its workers working and savers saving, it holds down its currency and lends to buyers of its goods.
- Spendland is fearlessly indulgent. It continually finds ways to monetize its wealth and borrow from it. To keep its consumers consuming, it lets its currency appreciate and seeks ever-expanding credit lines.

Debt-financed booms in Spendland gave it staying power. Housing prices spiraled up, padding household wealth and encouraging more financial innovation to tap it. Government spending rose faster than taxes, padding growth and price-to-dividend ratios. In effect, Saveland swapped current consumption for stakes in Spendland’s housing appreciation.

With some oversimplification, we can use the United States, United Kingdom, and the PIIGS as a proxy for Spendland. Similarly, we can use Asia, the rest of Europe, and the oil-producing Middle East as a proxy for Saveland. In 2007, the two regions were close to each other in GDP, equity market capitalization and fixed income assets (IMF 2008). However, the trends were very different. Bank assets to GDP halved in Saveland while growing by over half in Spendland. Nearly all the extra banking leverage was tied to the housing market.

Over the previous decade, Spendland’s gain in housing capitalization from new construction and appreciation exceeded 2007 GDP and roughly matched total equity market capitalization. Housing markets in Saveland
were sideshows in comparison. In Japan and Germany, real housing prices declined by 20% to 30%, with little new construction. In emerging Asia, housing booms started from too low a base to have a dominant impact.

Housing booms in Spendland have since gone bust, taking down equities and GDP. Economic recovery has begun. But the banking systems remain fragile, and governments have overextended themselves in their defense. Lagging productivity growth, the implicit tax burden of high social benefits, and depletion of energy and groundwater reserves argue for substantial belt tightening. Yet the socialization of debt continues to defer a reckoning. Future generations will marvel at both the genius of rollover and its long-term costs.

Credit Orbits

In the model of worthless debt from the previous chapter, government fiscal policy is fixed, while default risk is a known increasing function of the debt stock. The debt burden stabilizes or spins out of control without provoking a change of policy, even though everyone anticipates what will happen. Let us now posit debtors and creditors as more adaptive and less anticipatory.

For simplicity, I will drop explicit references to time from the notation. Let \( r \) denote the current interest rate paid on the debt stock \( B \). Suppose the debt stock \( B \) grows geometrically at rate \( r + h(r) \), where the primary deficit \( h \) is a decreasing function of the interest rate \( r \). That is, debtors try harder to wind down debt when interest rates are high. For more simplicity, imagine that \( h \) is linear with intercept \( a \) and slope \( -b \). We can then write

\[
B' = (r + a - br)B = (a - (b - 1)r)B. \tag{5.1}
\]

For debt not to get infinitely high or infinitesimally low, both \( a \) and \( b - 1 \) must be positive.

All else being equal, \( r \) should rise with the aggregate servicing burden \( rB \), since that raises incentives for default and investors’ demands for insurance. However, a higher \( r \) helps reassure creditors that the debtor is trying to pay and that the risks are being compensated. Again assuming scalar coefficients, we write

\[
r' = (Bd - c)r. \tag{5.2}
\]
With full information and foresight, we ought to specify a default process and check that the risk premium fairly compensates for it. By ignoring this, our model implicitly assumes that creditors can’t check to nearly the degree needed and just go with the flow. Should we believe that? Not fully, but our previous discussion suggests some elements are true, and many critics assert that they dominate. Let us briefly suspend our disbelief and work through the implications.

The system (5.1)–(5.2) is mathematically identical to the famed Lotka-Volterra equation, a stylized description of predator-prey interactions. In this case debt is prey and credit spread is predator. Any debt and credit spread combination we observe is bound to recur and hence can be viewed as a kind of equilibrium. Yet it will hardly ever feel like equilibrium. If we graph debt on the horizontal axis and credit spread on the vertical axis, the coordinates move counterclockwise in oblong orbits. Although there is a stable center, they never reach it.

An example is charted in Figure 5.2. A static equilibrium sets debt as 50% of GDP with a credit spread of 2%. Every other allocation orbits around it; arrows indicate the direction of motion. For small deviations
from equilibrium the orbit is nearly elliptical. For large deviations the orbit swings so wide that observers will fear the economy has entered a high debt/high credit spread trap.

Compounding the anguish, credit spreads will widen as debt shrinks, reaching their maximum at the equilibrium level of debt. Yet that same level of debt can recur later with minimum credit spread. The markets continually lag or overshoot.

The Appendix folds in two enhancements. The first makes fiscal tightening more than linear in the servicing burden, to allow for bolder response in crisis. The second makes the risk premium a decreasing function of debt growth, on the grounds that debt growth fuels near-term economic growth and eases rollover.

Under the first enhancement, credit orbits spiral inward. Under the second enhancement, credit orbits spiral outward. Combining them tends to create a stable limit cycle, with all orbits converging toward it. All these limit cycles swing out at extremes, giving the impression of a debt trap.

While no deterministic model can do justice to the credit system, it is hard to escape the impression that prudence pays. Economies that issue whatever debt the market will accommodate seem inherently prone to boom-bust cycles. Credit spreads can easily warn too little before crisis and too much after.

Breakdown and Regulation

A perceived debt trap wrenches a financial system. It tempts debtors to default, creditors to pull their funding, and political overseers to intervene. Even if a wide debt orbit is stable in theory, it will likely be unstable in practice.

The best-known breakdown is a bank run, where customers rush to withdraw their deposits. The key trigger for a bank run is fear of fear. If I fear that enough other investors will withdraw their deposits to exhaust the bank’s reserves, I may withdraw my money first and spread contagion.

At heart, the doubt game undermining banks is no more peculiar than the confidence game boosting money. However, the confidence game makes people feel richer, while the doubt game makes people feel poorer. Hence policymakers and the public are far more disposed to quell a panic than a mania.
Time after time, a heady boom ensues, with little care to rein it in. When boom turns to bust, regulators rush to save investors from the consequences. Nowadays most deposits in developed countries are regarded as completely insured, regardless of the lending strategy of the bank. Even regulators who deny that feel compelled to provide insurance when crisis breaks. The realization has helped drive financial leverage to previously unimagined heights.


The European Central Bank (ECB) ostensibly exerts more discipline. However, the refinancing facilities it offers to eurozone banks basically treat any eurozone government bond as riskless. This encourages banks to buy the highest-yielding bonds in the zone, put them to the ECB as collateral, and pocket the differential credit spread. Naturally those are the bonds from the fiscally challenged PIIGS. Technically the banks remain liable to the ECB if the PIIGS default, but between bankruptcy and upheaval few will manage. In this way PIIGS bonds have come to dominate the euro’s reserves, although the public little realizes it. It is Gresham’s Law applied to sovereign debt.

In defense of the Fed and ECB, a refusal to provide liquidity in emergencies threatens far more immediate damage than a rollover of bank debt. Other regulations and bankers’ self-interest are supposed to promote longer-term banking system health. The Basel Committee on Banking Supervision, which links together various national regulators, has sought to raise international standards. In 1988 it published a set of minimal capital requirements for banks, known as the Basel Accord, which the Group of Ten countries officially adopted in 1992. Various shortcomings, many of them exposed in the crises of 1997 and 1998, led to promulgation of new standards in 2004, known as Basel II.

Basel II focused on clear measurement and labeling of default risks. Each asset’s exposure would be multiplied by its estimated risk weight. Banks would have to keep a capital buffer of at least 8% of total risk-weighted assets. The apparent aim was to cover all risk 99.9% of the time.

The formulas for measuring risk were complex. Basel II’s banner document (Basel Committee on Banking Supervision 2004) ran to 239 pages.
Nevertheless, the formulas ignored most fluctuations stemming from observer uncertainty, market herding, and overshooting. It is as if orchard owners decided heating and irrigation needs based on average yearly temperatures and rainfall, rather than on how cold or dry it can get.

Consider, for example, Basel II’s main precaution against bank runs: total capital adjusted for default risk. Bank capital can stop a run only if it can be converted quickly to cash. While real estate, ownership stakes in enterprises, and long-term bonds may remain creditworthy, they can generate cash only by selling a stake or borrowing against it. A bank run is the worst time to generate this cash, because the mad dash for liquidity it reflects likely pervades the financial system as a whole.

Long duration aggravates bank difficulties in crisis. The closer investments are to delivering cash in hand, the more nearly liquid they are. They will command a premium in crisis, or at least sell with less discount. Also, risky credits that come due in crisis can be reissued at higher spreads, helping to offset losses.

Yet Basel II hardly looked at duration mismatch, market volatility, bid-ask spreads, and other signs of potential illiquidity. Indeed, by allowing unlimited leverage for notionally safe credits, Basel II removed a traditional stabilizer. It is one of several ways in which Basel II aggravated the economic cycle.

A popular view of the recent crisis is that an unregulated financial sector ran amok. The reality is even more disturbing. Curbs were in place but inadvertently steered in the wrong direction. See Persaud (2000, 2008), Kashyap and Stein (2004), and Financial Stability Forum (2009) for more discussion.

“It looks like credit cycles are inevitable,” said Pandora. “Market participants can’t distinguish well enough between changes in liquidity and changes in fundamentals. Their seemingly rational reactions to current conditions make markets overshoot.”

“It’s interesting how well veiled the cycle is,” said Prometheus. “The boom can last enough to seem the natural state. The bust can be sharp enough to look like an aberration. No wonder so much policy is geared to stimulus rather than to stability.”

“Yes, policymakers are much warier of high inflation when it involves current goods and services than when it involves asset prices. It’s under-
standable. Who wants to criticize the confidence boost it represents, and which might be justified? But a credit boom begs a bust.”

“Duration mismatch makes the cycle worse. Why don’t bankers focus on the payments business?”

“Because borrowing short to lend long is more fun and profitable. At least it is until it isn’t.”

“And when it isn’t, governments or central bankers usually bail them out.”

“Of course. They don’t want financial confidence collapsing. And they want to help short-term depositors, who couldn’t reasonably have seen it coming. Sure, sometimes they go to extremes. That’s inevitable in panic.”

“I’m not faulting them for panic,” said Prometheus. “But when calm returns they ought to think more about the laws of cause and effect. If the government insures short-term deposits, let it insist they fund short-term assets. Problems will come quicker to the surface that way, with less risk of inflating a credit bubble.”

“Many economists think that governments should subsidize long-term investment. Channeling short-term deposits toward long-term loans helps do that.”

“Many of those same economists worry about current demand being too low or a global savings glut. They’re not consistent.”

“Surely you’re not proposing to ban long-term loans.”

“Of course not. I just want them backed by long-term funding.”