

# **The Ascent of Money**

## **A Financial History of the World**

**By: Niall Ferguson**  
**Ailen Lane, 2008**

### **Introduction**

The pivotal role of finance in the modern global economy can be understood through some figures. In 2006, the global GDP was \$47 trillion whereas the total market capitalization of the world's stocks was \$51 trillion, that of domestic and international bonds was \$68 trillion and that of derivatives, \$473 trillion. The daily volume of forex trading was about \$2 trillion while the monthly volume of trading on the global stock markets was \$7 trillion. The financial sector was contributing 7.7% of US GDP by 2005.

This fascinating book is about how finance has evolved in the last 4000 years. Despite the recurrent hostility the world of finance faces, money remains at the root of most progress. Financial innovation has played an important role in the material prosperity of mankind. The ancient Babylonian civilization, the Italian Renaissance, the Dutch and the British empires and the US all rose to the top thanks to financial innovation. The defeat of Napoleon at Waterloo was at least partly due to the financial acumen of Nathan Rothschild, who worked on the side of the British.

Ferguson who is one of the leading business historians of our times, remains optimistic about the central role of finance. He points out that poverty is not due to the exploitation of greedy financiers. Rather, it is due to the lack of a well functioning financial system. Only when borrowers have access to efficient credit networks, they can escape from loan sharks. An efficient financial system helps savings to be mobilized and channeled to areas where they can be productively deployed.

### **Money**

For thousands of years, because they were available, affordable, durable, fungible, portable and reliable, metals such as gold, silver and bronze served as money. Coins have been traced to 600 BC at the Temple of Artemis at Ephesus (Modern Turkey). By the time of the Roman empire, coins were made in gold, silver and bronze. A standardized coin was introduced in China in 221 BC. Silver coins were used during the time of Charlemagne. But shortages of precious metals after created problems for the economy. So one of the objectives of the Crusades was to overcome the shortage of money. Similarly, the Spanish conquistadors plundered silver in Mexico. Today the paradigm has changed. No longer do we depend on gold, silver and other precious metals for our coins. Instead we use mostly paper money and electronic money. Money is essentially a matter of belief, even faith, and rests on the relationship between lender and borrower.

## **Banking**

In the early 14<sup>th</sup> century, Italy was the main financial hub of the world. One family, the Mediccis in particular, made a huge impact on the Renaissance. They were foreign exchange dealers who started to use the Bills of Exchange in a big way. If a sum could not be paid in cash until the conclusion of a transaction, the creditors could draw a bill on the debtors. Creditors could use the bill as a means of payment or obtain cash at a discount from a banker willing to act as a broker. The Church condemned the charging of interest, but accepted bill discounting transactions. Indeed, bill discounting proved to be a good source of profit. The Mediccis also systematically maintained their books of accounts. Despite the hostility and resistance they faced from sections of the population, the Mediccis rode to success by making their banks bigger and more diversified than any previous financial institutions. The Italian banking system soon became a model for other countries in Northern Europe. The next wave of financial innovation occurred in Amsterdam, London and Stockholm. The Amsterdam Exchange Bank, set up in 1609, pioneered the system of cheques and direct debits/transfers. A merchant could make a payment to another simply by arranging for his account at the bank to be debited and the counterparty's account to be credited. But the Exchange bank maintained close to 100% ratio between its deposits and reserves. It was the Swedish Riksbank set up in 1656 that introduced credit creation. By lending amounts in excess of its metallic reserves, the bank pioneered the concept of fractional reserve banking. The bet was that depositors were unlikely to ask back their money en masse. So only a fraction of the money needed to be kept as reserve at any point of time. The Bank of England was set up in 1694 to assist the British government with war finance. The bank had a partial monopoly on the issue of bank notes. These were promissory notes that did not bear interest and were designed to facilitate payments without the need for both parties in a transaction to have current accounts. The Bank of England's discount rate soon became the benchmark money market interest rate.

With the increasing acceptance of cashless transactions, fractional reserve banking and central bank monopolies on note issue, the nature of money changed as did banking. Credit was quite simply the total of the bank's assets (loans). Most of it existed in the form of bank notes and token coins recognized as legal tender along with the invisible money that existed only in deposit account statements. The core function of banks became information gathering and risk management. Banks tried to maximize the difference between the returns on their assets and the costs incurred on their liabilities while taking care to maintain adequate reserves and avoid a run on the bank.

Several kinds of banks emerged in Europe. Some banks helped finance domestic and international trade by discounting the bills of exchange drawn by one merchant on another. For example, Barings specialized in transatlantic merchant banking. After 1858, the restrictions on joint stock banking were lifted. This paved the way for the emergence of large commercial banks like London & Westminster (1833), the National Provincial (1834), the Birmingham and Midland (1836), Lloyds (1884) and Barclays (1896). Many European countries set up monopolistic central banks operating the gold standard – Banque de France (1800), German Reichsbank (1875), Bank of Japan (1882) and Swiss National Bank (1907). The US did not have a central bank for a long time. The country followed a laissez faire model till the Federal Reserve System was set up in the 1913. This fragmented system with large numbers of under capitalized banks was a recipe for financial instability. Panics were a regular feature of American economic life, especially in the Great Depression, when a major banking crisis was aggravated by wrong monetary policy. The introduction of deposit insurance in 1939 went a long way towards preventing bank runs.

However, the American banking sector remained fragmented till 1976 when inter state banking was legalized. It was only after the Savings & Loans crisis (1993) that the number of national banks fell below 3600 for the first time in nearly a century.

### **The evolution of bond markets**

After the creation of credit by banks, the birth of the bond market marked a second watershed mark in the ascent of money. Today bond markets play a central role in the management of the economy. It is the bond market that sets long term interest rates for the economy as a whole. Indeed, most of our savings lands up in the bond market.

It was wars that fuelled the rise of bond markets. The Italian city states contributed in a big way to the rise of the bond market. The ability to finance war through a market for Government debt was an invention of the Italian Renaissance. But the action soon shifted to London. No wonder because Britain was the superpower those days. By the mid 18<sup>th</sup> century, London had a thriving bond market in which government consols were the dominant securities traded.

Nathan Rothschild was the master of the London bond market. Rothschild realized that wars had to be financed. The most accepted currency during a war was gold. Rothschild had accumulated a lot of gold for the Battle of Waterloo. But the battle got over too quickly. He realized that the demand for gold was bound to fall. But he also saw that the British government's borrowing would reduce, leading to a rise in prices of British bonds. So he piled up plenty of UK government bonds and sold them at a profit of £ 600 million after the prices had gone up by 40% by 1817.

With a strong capital base and an excellent information network, the Rothschilds became the preferred investment bank to place many bond issues of European governments. Typically, the Rothschilds would buy a tranche of bonds outright from a government and charge a commission for distributing these bonds to a network of brokers and investors throughout Europe. They also enjoyed a good spread between the price paid to the government and the price received from investors. Quite a few of the bond issues those days were global. For example, the initial public offering of Prussian bonds was made simultaneously in London, Frankfurt, Berlin, Hamburg and Amsterdam.

The Rothschilds also played an important role in deciding the outcome of the American Civil War, by sitting on the sidelines and deciding not to back the south. This proved to be a wise decision. The bonds of the south were placed by another merchant banker, Emile Erlanger on the backing of the cotton crop in the south. The south successfully engineered a rise in the price of cotton by restricting supply. But when New Orleans fell and doubts about shipment of cotton grew, the south's cotton backed bonds had few takers. Those who had invested in the Confederate bonds ended up losing everything since the victorious north decided not to honour the debts of the south. The south was forced to print money leading to a run away inflation. The bet made by the Rothschilds had again paid off.

### **The stock markets**

After banking and bond markets, the next step in the evolution of the financial system was the rise of the joint stock limited liability corporation, whose shares traded on the markets. The share prices were determined by investors' perceptions about the quality of management, appeal of the company's products and future prospects for the firm. But these perceptions have from time to

time also led to bubbles. Indeed, in the 400 years since trading in shares began, there have been various financial bubbles, i.e., share prices rising to unsustainable heights before crashing.

Typically bubbles start when some change in economic circumstances creates new and profitable opportunities for some companies. Rising expected profits lead to a rise in stock prices. The prospect of easy capital gains attracts first time investors and fly by night operators. At some point, the "insiders" realize that expected profits cannot justify the new exorbitant price of the shares and begin to book profits by selling. As share prices fall, investors start withdrawing and the markets begin to crash.

Bubbles are more likely to occur when capital can flow freely across countries. Bubbles are also facilitated by easy credit creation. Many bubbles have been the result of the policies of central banks. The Great Depression is a good example. The Fed bore the primary responsibility for turning the crisis of 1929 into the Great Depression. By sterilizing the large gold inflows into the US and preventing them from increasing money supply, the Fed did prevent the bubble from growing bigger. But later, the Fed did too little to counter the credit contraction caused by banking failures. In November and December 1930, 608 banks failed. The Fed made a blunder by reducing the amount of credit outstanding. Banks started selling assets in a frantic dash for liquidity, driving down the bond prices. When Britain abandoned the Gold standard in September 1931, foreign banks rushed to convert dollar holdings into gold. The Fed raised its discount rate in two steps to 3.5%. This halted the external drain but caused many more bank failures. Between 1929 and 1933, while commercial bank deposits and loans reduced, the cash in public hands increased significantly. No wonder, the economy went into deflation mode.

Even today, central banks have a problem in identifying bubbles and tacking pre-emptive action. But they have learnt from experience and today look better equipped to handle the situation when a bubble bursts. On October 19, 1987, the Dow Jones fell by 23%. But within little more than a year, the Dow came back to where it had been before the crash. Greenspan's response to the crisis was swift. He announced that the Fed was ready to serve as a source of liquidity. The Fed injected cash into the system and reduced the cost of borrowing by nearly 2% in a space of 16 days. In the recent crisis, central bankers all over the world have moved decisively and injected the much badly needed liquidity into the economy.

### **Risk management and insurance**

How many of us are aware that it was two Church of Scotland ministers who invented the first true insurance fund more than 250 years ago in 1744?

Before we come to that, a bit of history is in order. It was not until the 1350s that true insurance contracts began to appear. Gradually, contracts became standardized. In the late 17<sup>th</sup> century, a dedicated insurance market began to develop in London. After the Great Fire of 1666, fire insurance took off. A specialized marine insurance market began to develop around Edward Lloyd's Coffee House in London's Tower Street. In 1774, the Society of Lloyd's was established to bring together 79 life members each of whom paid a £ 15 subscription. The liability of the underwriters was unlimited. The financial arrangements could be described as pay-as-you-go. The aim was to collect sufficient premiums in a year to cover that year's payments and leave a margin of profit. Later, limited liability companies like Sun Insurance were set up. Most of the insurance schemes which existed early on were gambles. No adequate theoretical basis existed for evaluating the risks that were being covered. Then there were some major breakthroughs.

- ❖ Blaise Pascal and Pierre de Fermat developed important concepts in probability.
- ❖ In 1662, John Graunt worked on mortality statistics.
- ❖ Edmund Halley recorded the life tables.
- ❖ In 1705, Jacob Bernoulli developed the law of large numbers. Inferences could be drawn with a degree of certainty from sufficiently large samples.
- ❖ In 1733, Abraham de Moivre worked on the normal distribution.
- ❖ In 1738, the Swiss mathematician Daniel Bernoulli proposed the utility theory. The value of an item must not be based on its price but rather on the utility it yields. The utility resulting from any small increase in wealth is inversely proportional to the quantity of goods previously possessed.
- ❖ In 1764, Bayes developed the theory around conditional probability.

It was not merchants but mathematicians who came up with the innovations that were needed for insurance to take off. And it was clergymen not merchants who converted theory into practice. Ministers Robert Wallace and Alexander Webster, along with Colin Maclaurin, a professor of mathematics concluded that collecting an annual premium which could be used to take care of widows and orphans as and when ministers died was not sustainable. They felt that the premiums had to be profitably invested. Widows and orphans would be paid out of the returns on the investment. What was needed was an accurate projection of how many beneficiaries there would be in the future and how much money would be generated to support them.

The Scottish Ministers' Widows Fund was truly a milestone in financial history. Soon funds were set up in other parts of the English speaking world. Over time, insurance companies became some of the biggest investors in the world. Size matters in insurance. The more people who pay into a fund, the easier, it becomes, by the law of averages, to predict what will have to be paid out each year. Actuaries can calculate the likely life expectancies of a large group of individuals with great precision. Insurers also need to know what the investment of their fund will fetch.

Insurance is not the only way of covering risk. Various hedging instruments are available today to deal with different risks. The origins of hedging lie in agriculture. Farmers faced uncertainty about the price at the time of the harvest. First forward contracts and later futures contracts emerged to deal with this kind of uncertainty. Chicago emerged as the hub of futures trading. Later, options and swaps emerged. Today we have other sophisticated derivatives like credit default swaps to insure against credit risk and weather derivatives to offset the affects of extreme temperatures. Along with various exchange traded instruments, OTC (Over the Counter) derivatives have also emerged.

### **The real estate market**

The real estate market is unique. Most people, however, economically illiterate, have a view on its future prospects. In finance, the conventional wisdom is that there is nothing safer than lending money to people with property. If people default on the loan, the house can be repossessed. And even if people run away, the house will remain where it is. Since 1959, total mortgage debt outstanding in the US has risen seventy five fold. By the end of 2006, American owner occupiers owed a sum equal to 99% of US GDP, compared to 38%, about 50 years back.

For most of history, home ownership has been the exclusive privilege of an aristocratic elite. If the old class system based on elite property ownership was shaped by Britain, the democratization of

property started in the US. Before the 1930s, only about 40% of American households belonged to owner occupiers. Mortgages were short term, usually for three to five years. People paid interest and the principal was returned at the end of the tenure of the loan. The people who borrowed money to buy homes in the 1920s, found themselves in deep trouble when the Great Depression arrived.

Roosevelt's New Deal revolutionized the American housing landscape. A new Home Owner's Loan Corporation was set up to refinance mortgage on longer terms upto 15 years. A Federal Home Loan bank Board, set up in the 1932, encouraged a new breed of institutions called Savings and Loans that took deposits and lent to home buyers. Federal deposit insurance was introduced to prevent bank runs. By providing federally backed insurance for mortgage lenders, the Federal Housing Administration (FHA) sought to encourage large fully amortized and low interest loans. By standardizing the long term mortgage and creating a national system of official inspection and valuation, the FHA laid the foundation for a national secondary market. As the average monthly payment on a mortgage reduced, home ownership became a realizable dream for many Americans.

America put in place an elaborate institutional framework of Government Sponsored Enterprises (GSE) to champion the cause of housing. Fannie Mae was set up to issue bonds and use the proceeds to buy mortgages from Savings and Loans. In 1968, Fannie Mae was split into the Government National Mortgage Association (Ginnie Mae) to serve poor borrowers like military veterans and a redefined Fannie Mae which acting as a privately owned but government sponsored enterprise could buy conventional as well as government guaranteed mortgages. A couple of years later, the Federal Home Loan Mortgage Corporation (Freddie Mac) was set up. With the Community Reinvestment Act of 1977, American banks came under government pressure to lend to the poorer minority communities. Till the 1980s, the relatively high inflation prevailing, ensured a really good time for borrowers. Even as the real value of loans declined, property prices almost tripled between 1963 and 1979. When the Fed started to tighten under Paul Volcker, in a bid to cut inflation, the S&Ls were at the receiving end. They were losing money on long term fixed mortgages because of inflation and at the same time losing fixed deposits to higher interest paying money market funds. The S&Ls were given freedom to invest in various instruments. At the same time, their deposits were insured. This gave rise to the moral hazard problem. Many S&Ls collapsed because of reckless lending. The final cost of the S&L crisis between 1986 and 1995 was \$153 billion or 3% of GDP of which tax payers had to foot \$124 billion. This was the most expensive financial crisis since the Depression.

The fall of S&Ls gave birth to another idea – securitization. Lewis Ranieri of Salomon Brothers pioneered this concept by bundling thousands of mortgages together as the backing for new securities that could be sold as alternatives to government and corporate bonds. After the mortgages were bundled, the interest payments could be sub divided into tranches with different maturities and credit risks. The first issue of collateralized mortgage obligation happened in June 1983. Since a majority of the mortgages enjoyed an implicit guarantee from Fannie Mae, Freddie Mac and Ginnie Mae, the bonds used to securitise were perceived as government or investment grade bonds. Between 1980 and 2007, the volume of GSE backed mortgage backed securities grew from \$200 million to \$4 trillion. When private bond insurers emerged, even mortgages without GSE guarantees could be securitized. In 1980, only 10% of the home mortgage market had been securitized. By 2007, this had risen to 56%.

Sub prime mortgages took off because of securitization. These mortgages were aimed at people with a poor credit history. Many of them were adjustable rate mortgages (ARMs) where the interest rates would vary according to changes in short term lending rates. Quite a few were interest only mortgages without amortization. Most had introductory teaser periods when the interest rate was kept artificially low.

Politicians helped to fuel the housing boom. President George Bush signed the American Dream Down payment Act of 2003 to subsidise first time house purchases by lower income groups. Lenders were encouraged not to press borrowers for full documentation. Pressure was also put on Fannie Mae and Fraddie Mac to support the sub prime market.

The sub prime market worked fine as long as interest rates stayed low, people retained their jobs and real estate prices continued to rise. Subprime lenders pocketed fat commissions and then sold the loans to Wall Street banks who bundled them into securities and repacked them as CDOs. Investors all over the world bought these instruments for an incremental return of a few basis points on their capital. It looked as though securitization was allocating risk to those best able to bear it. But actually, risk was being passed on to people who understood the least about it. The people, who dealt directly with the borrowers and knew the most, bore the least amount of risk.

Looking back, the real estate market saw a big bubble which had to burst at some point of time. In cities all over the world, house prices soared above levels that could be justified in terms of rental income or construction costs. There was irrational exuberance about real estate and the capital gains it could yield. Politicians fuelled the boom by encouraging home ownership and introducing suitable policy measures.

Ferguson correctly mentions that the tendency of many middle class households to put virtually all their income into a highly leveraged investment defies the basic principles of risk management. The key to financial security should be a properly diversified portfolio of assets. For investors there has to be a sustainable spread, between borrowing costs and returns on investment. For borrowers, the debt burden should be aligned with their income. These fundamental principles were conveniently overlooked during the build up to the sub prime crisis.

## **Financial globalization**

About 400 years back, there was little difference between the per capita incomes in the west and in the east. China had about the same standard of living as the US. But between 1700 and 1950, the western economies took off while China's per capita GDP actually declined. There is a strong possibility that China's problems were due to its financial system. In renaissance Europe, fiscal competition drive financial innovation. China financed its deficits by printing money. Moreover, coinage was available in plenty thanks to the trade surplus China enjoyed with the west. So China had little incentive to develop markets for commercial bills, bonds and equities. Modern financial institutions did come to China but as part of the package of western imperialism. So these institutions were always vulnerable to patriotic backlashes against foreign influence. A legacy of bitterness towards colonial exploitation ensured that China (and India) ended up largely cutting themselves off from the global markets from the 1950s till the 1970s.

The three decades before 1914 were golden years for international investors. The cost of communication fell dramatically. The gold standard ensured exchange rate stability and fiscal discipline. Inflation remained gentle and reduced the debt burden in real terms. Interest rates remained low. Liquidity increased thanks to increased gold production and financial innovation. The banking system succeeded in mobilizing savings and channeling them into investments. Higher growth boosted tax revenues and kept deficits under check.

The assassination of Archduke Franz Ferdinand in Sarajevo on June 28, 1914 proved to be the turning point for global capitalism. When the crisis mounted, investors sensed the possibility of a full scale European war. Liquidity was sucked out of the global economy. Bond and stock prices started to fall as investors moved into cash. Exchange rates went haywire as investors started repatriating their money. The panic selling led to a fall in stock prices. Queues formed as people sought to exchange bank notes for gold coins at the Bank of England. London's role as the hub of international financial credit was suspended. The world's major stock markets were closed for periods of upto 5 months.

The gold standard aggravated the crisis. Some central banks raised their discount rates in the initial part of the crisis to minimize foreign capital repatriation and outflow of gold. In the emergency of war, a number of countries, beginning with Russia, simply suspended the convertibility of their currencies into gold. In many countries, the authorities reacted to the liquidity crisis by printing money.

The closure of the stock market and the intervention of the authorities prevented a catastrophic fire sale of assets. But it proved impossible to restore free capital mobility. Currency crises, defaults, arguments about reparations, war debts and the onset of the Great Depression led many countries to impose exchange and capital controls as well as trade restrictions. Thus, the first era of financial globalization took at least a generation to evolve. But it broke down in a matter of days.

Under the Bretton Woods agreement which was hammered out in 1944, exchange rates remained fixed but the dollar became the international reserve currency in place of gold. The dollar itself remained notionally convertible into gold. Control of capital movements became a key theme for many governments. Even tourists found it difficult to get foreign exchange. Cross border capital flows were mostly between governments.



The IMF was set up to regulate the international money system while the World Bank was set up to rebuild countries shattered by the war. The IMF and World Bank typically emphasised conditionality, i.e., they linked financial assistance to reforms. They stressed fiscal discipline to reduce budget deficits. Over time, they also began to encourage liberalization of trade and capital flows. The Organization for Economic Cooperation & Development, the club of rich countries, also favored a return to free capital movements in the 1980s. Financial liberalisation became the theme of the following decades. In London, Margaret Thatcher went ahead with capital account liberalization. The US followed. With convertibility, fluctuation in exchange rates and interest rates became common.

The 1980s saw the rise of a new breed of financial intermediaries, the hedge funds, pools of lightly regulated, highly mobile capital. None symbolized the clout enjoyed by hedge funds more than George Soros who made huge profits by betting on the fall of the pound and its withdrawal from the European Exchange Rate Mechanism in 1992.

Hedge funds have since then continued to grow in size and attracted a lot of attention in recent years. These funds do not have loyalty to any country. Their scale of operations is also unimaginable. But this also makes them very risky. Long Term Capital Management (LTCM) made huge bets and profits in the mid-1990s before collapsing in the wake of the global currency crisis of the late 1990s. The firm's value-at-risk models indicated that it would take a ten sigma event to cause the firm to lose all its capital in a single year. The probability of such an event was 1 in  $10^{24}$  or effectively zero. But suddenly, all the markets where LTCM had exposure started moving in synch. The correlations increased dramatically. When losses began to mount, many participants simply withdrew from the market, leaving LTCM with a large portfolio of illiquid assets that could not be sold at any price.

Along with hedge funds, sovereign wealth funds (SWFs) have also begun to play a big role in the international monetary system. By the end of 2007, these funds had around \$2.6 trillion under management. In the first round of recapitalization of many of the global banks, the SWFs played a major role.

China has come to occupy a central place in the global financial system. For several decades after the communist revolution, the Chinese economy struggled. It was Deng Xiao Ping who realized the need to liberalise the economy. Capital requirements multiplied for the Chinese economy. When the Chinese wanted to get foreign capital, they focused on direct investment. But bulk of China's investments has been financed by the country's own savings and contributions from the overseas Chinese. In 2006, Chinese dollar reserves passed the \$1 trillion mark. Most of these dollars have been invested in the US bond markets. In 2007, the US had to borrow about \$800 billion from the rest of the world or \$4 billion every working day. China has effectively become banker to the US. In short, the direction of capital flows has reversed and is now from east to west.

By selling bonds worth billions of dollars to China, the US was able to enjoy significantly lower interest rates than would otherwise have been the case. Chinese imports helped to hold down US inflation. Availability of Chinese labour put a control on US wage costs. The more China was willing to lend to the US, the more Americans were willing to borrow. Indeed, China was a major factor behind the liquid mortgage markets in the US before the sub prime crisis got under way.

In the first age of globalization, a symbiotic relationship existed between Britain, the world's financial centre, and Germany, Europe's most dynamic industrial economy. A sudden deterioration in relations between the two countries led to war and a retreat from globalization. Today the two countries occupying the centre stage are the US and China. A deterioration of political relations between these countries could well trigger off a retreat from globalization, like it happened about 100 years back. History tells us that major wars can erupt even when economic globalization is very far advanced and the dominance of an English speaking empire fairly secure. The longer the world remains without a major conflict, the harder it becomes difficult to imagine one. When a crisis strikes complacent investors, it causes much more disruption than when it strikes battle scarred ones. The really big crises come just seldom enough to be beyond the living memory of today's bankers, fund managers and traders.

### **Conclusion**

The financial system has evolved over the past 4000 years. The starting point was money. Money in turn gave rise to banks. From the 13<sup>th</sup> century, the market for government bonds took off. From the 17<sup>th</sup> century, equity trading took off. The 18<sup>th</sup> century saw the emergence of insurance funds and pension funds. In the 19<sup>th</sup> century, derivatives arrived. In recent years, we have seen the rise of real estate, leverage and new financial intermediaries like hedge funds.

History tells us that economies that have leveraged financial innovations have performed better over the long run than others. Financial intermediation generally permits a more efficient allocation of resources, compared to feudalism or central planning. From ancient Mesopotamia to present day China, the financial system has been one of the driving forces behind human progress. But the progress of finance has not been and will not be a smooth one. Markets are fooled by randomness and black swans from time to time. This is because the future is always uncertain and something unexpected happens from time to time. Human behavior is also responsible for the inherent instability of the financial system. The markets are at the mercy of our innate inclination to move from euphoria to despondency. Human beings also fail to learn from history.

Like natural species, the financial system has been adapting itself to change. In evolutionary terms, the financial services sector appears to have passed through a 20 year Cambrian explosion with existing species flourishing and new species increasing in number. As in the natural world, the existence of giants has not precluded the evolution and continued existence of small species. The very difficulties that arise as publicly owned firms become larger and more complex give opportunities to new types of private firms. What matters in evolution is not size or complexity but how good the organism is at surviving and reproducing its own genes.

Every shock to the financial system must result in casualties. Left to itself, natural selection must work to eliminate the weakest institutions in the market. But most crises, due to a concern with protecting customers and preventing a derailment of the financial system, lead to new rules and regulations. Ferguson cautions that the possibility of extinction must not be removed by excessively precautionary rules.

The book ends on an optimistic note. Though financial history has seen many ups and downs, there is little doubt that its trajectory is unquestionably upwards. Financial markets must not be viewed as monsters that must be put back in their place. As Ferguson puts it, "financial markets are like the mirror of mankind, revealing every hour of every working day the way we value

ourselves and the resources of the world around us. It is not the fault of the mirror, if it reflects our blemishes as clearly as our beauty."