

INTERNATIONAL REAL ESTATE REVIEW

2020 Vol. 23 No. 3: pp. 937 – 962

Crashes, Contagion, Cygnus, and Complexities: Global Economic Crises and Real Estate

Michael D. Edelstein

MDE Enterprises, LLC. Email: MichaelEdelstein1@gmail.com

Robert H. Edelstein

Fisher Center for Real Estate and Urban Economics, Haas School of Business, University of California at Berkeley. Email: Edelstein@Berkeley.edu

The fundamental message of this paper is simple and fourfold. The world has endured many economic – financial frenzies, panics, and crises that, at first glance, appear to be remarkable and special, but upon closer examination, mirror each other in several ways. Typically, these historical economic crises are resultant of excessive debt, contain a trigger event that creates a "crisis in confidence", suffer a boom bust cycle with significantly enhanced financial and economic volatilities, and generate a boom bust cycle that leads to major contagion effects across the financial and real sectors and spreads internationally. Our analysis as a case study examines and demonstrates that the Great Financial Crisis of 2007-2008 exhibits extraordinary causal features and similarities with the Long Depression of 1873.

Keywords

Economic and Real Estate Booms and Busts, Depressions, Economic Crashes, Global Economic Crises, Economic Contagion

1. Introduction

Globalization has changed the world in many ways. Real and financial markets have become irreversibly integrated. This has had a major impact upon the pricing and production of global and local assets, including real estate. Moreover, burgeoning real estate lending and securitization have been a major facilitator for the globalization of financial markets over the past two decades, and have spawned intense international economic and financial cross border activity.

During the recent Global Financial Crisis (GFC) of 2007-2008, many observers claimed that globalization and economic-financial integration intensified and exacerbated contagion effects.¹ The historical record may suggest otherwise. The objective of this paper is to demonstrate that in past economic recessions, contagion has been not only prevalent, but also a severe, powerful, and virulent force. Economic and financial crises in large countries have a long record of causing contagion that frequently evolves into larger and more devastating crises that wreak economic havoc upon other parts of the world. It is more surprising, in fact, that such historically discernable contagion effects seem to be subject to collective amnesia.

In what follows, we examine several historical examples of crises to first demonstrate that there is more similarity between these crises, or at least more than is usually recognized at the time. In most crises, someone will claim that what happened in the past cannot happen now...just before the boom turns to bust. Usually this is proclaimed by a trusted, iconic figure with gusto, conviction and confidence.^{2, 3} When the inevitable financial and economic collapse occurs the experts aver that it was an unforeseeable black swan à la

¹ In this paper, “contagion” refers to economic and financial contagion, which we define as follows: the likelihood that significant economic and/or financial market changes in one country will spread to other markets and/or countries. Contagion can refer to the spread of either economic/financial booms or economic/financial crises throughout a geographic region or regions.

² The ironic title of the book, ‘This Time is Different’, is explained by Reinhart and Rogoff (2009) who trace similarities between public and private sector financial crises over 800 years. This book has become an academic and practitioner classic, and suggests that one might be able, at a minimum to anticipate and not forecast these crises at an early stage as they unfold.

³ Roubini et al. (2011) have demonstrated an uncanny ability to read and anticipate the signs of crisis before many others. Roubini et al. (2011) are credited with foretelling accurately and sequentially the impending problems in the mortgage market and Wall Street investment banks that led to the Great Financial Crisis.

Taleb or at least a formerly unknown subspecies of *Cygnus* – no one could have known that the crisis was going to occur.^{4,5}

Can we draw lessons from the historical record of crises and contagions? Can we devise new public policies, rules, controls, regulations, and laws that will promote sustained growth without destructive boom/bust volatility? Does real estate and its contagion effects play a special role in many of these crises? Our task is to address these three questions.

The plan of our paper is as follows: the next section will provide and discuss common themes that relate to economic crises, real estate markets, and contagion. The subsequent section will provide a brief overview of United States (U.S.) booms and busts since 1800. Section III, the heart of our paper, will focus upon the Panic of 1873 and the ensuing Long Depression. Sections IV, V, and VI will draw notable comparisons between the economic-financial meltdown of 2007-2008, and several other severe 20th century financial and economic crises. Our analysis will highlight and illustrate how real estate has been intertwined and plays a substantive role in global financial and economic crises.

The last section will summarize why these contagion and financial-economic crises are prevalent, and examine how we may have inadvertently planted the seeds for prospective future crises, contagions, and real estate busts.

⁴ In this now classic book, Taleb (2007) suggests that statistical analyses can be abused and misused in evaluating and predicting outcomes such as crises. He explains how improbable events become likely, and sophisticated statistical techniques miss the change.

⁵ As of the writing of this manuscript, August 2020, the 2020 recession manifests many of the features of past economic downturns, including denials of culpability and recognition. The initial causal factor for the 2020 worldwide downturn was a non-economic supply shock, the COVID 19 pandemic. This shock had global ramifications, creating a profound worldwide economic downturn. In the United States, there were 30 million Americans that were unemployed in just five months, with the unemployment rate surging from below 4% to above 11%. Real output measured by GDP declined at an annual rate during the second quarter of 2020 by over 30%.

Some may argue that this is a black swan, but supply shock health problems are a part of history, such as the bubonic plague, the Spanish flu of 1918, and more recent SARS and Ebola outbreaks. While most recessions are caused by a rapid decline in demand, disease generated downturns are usually a combination of supply and demand shocks. The 2020 pandemic downturn requires “fixing” the health hazards of COVID 19 in order to be able to resolve the economic malaise. However, in essence, this type of COVID 19 pandemic has happened before and will probably happen again.

2. Common Themes: Overview and Introduction

The basic message of this paper is simple and four-fold. The world has endured many economic-financial frenzies, panics and crises that, at first glance, appear to be remarkable and special, but upon closer examination, mirror past experience in several ways.

First, a common element of most financial-economic crises is excessive debt accumulation. Sometimes the debt is created as sovereign debt; other times the debt is generated by the private banking system, private or state-owned corporations, or households. The infusion of capital and ratcheting-up of debt may provide a stimulus for growth, but ultimately if it is a binge, it leads to a bubble in, say, real estate or stock prices. A bubble occurs when economic activity expands faster than the underlying economic fundamentals and is therefore unsustainable in the long-run.

The second common element is a “crisis in confidence,” particularly when short-term debt is used to finance the boom. A trigger event (e.g., the failure of and bankruptcy filing by Lehman Brothers on September 15th, 2008) causes capital markets to seize up, making refinancing of short-term debt virtually impossible. Economic upturns depend generally upon debt rollover, and can abruptly end when short term capital is unavailable. While debt instruments, even very sophisticated financially engineered debt vehicles, do serve economic purposes and are useful, it is important that there is an appropriate balancing of risk and reward when utilizing debt. Public sector entities, private sector investors, and ordinary households confront this very balancing act.

Third, in boom-bust cycles, real assets such as real estate usually display extraordinary volatility. Real estate ownership, often financed with significant leverage, is prone to difficulties in financial-economic collapses. As the economy contracts, real estate cash flows and values decline and the ability of owners-borrowers to repay the debt diminishes, leading to a potential bust in real estate, failing real estate securities, and plummeting real estate asset values as mortgages and loans begin to default.

Fourth, if a boom-bust cycle is pronounced, it will lead to contagion effects across real and financial domestic markets and international borders. A crisis may commence in the financial sector and overflow into the real sector, and vice versa; it may commence in one country and over time, spread elsewhere.

3. U.S. Financial and Real Sector Volatility: Since 1800

Economic boom-bust cycles are commonplace. Since 1790, arguably, there have been 48 recessions in the U.S. alone, many of which were deep and long-lasting. The Great Depression of 1929-1933 was severe and lasted 3 years and 7 months, although the recovery was quite anemic, and, in fact, there was an add-on recession (caused by a bout of fiscal austerity) in 1937. The Great Depression, 1929-1933, was a worldwide episode. Similarly, the economic downturn of 1873-1879, the “Long Depression”, lasted 5 years and 5 months and will be a special focal point of the next section.

Tables 1a and 1b, a selective U.S. history of booms, busts and panics (recession dating is based on the National Bureau of Economic Research (NBER) data) shows various combinations of booms and busts and related crises and panics from 1809 through to 2007-2009. Tables 1a and 1b are subdivided because of certain data limitations before 1918. Banking crises and panics were rife until the mid-20th century. With the introduction of the Federal Reserve System in 1914, partially the result of the 1907 banking panic (discussed later), the frequency of major banking crises were reduced, with only three subsequent major episodes in the U.S.: the Great Depression of 1929-1933; the savings and loan (S&L) crisis in the 1980s; and the most recent GFC of 2007-2008. There is a debate on how and why recessions and crises are resolved. Are booms and busts part of a natural process?

Table 1a A U.S. History of Booms, Busts and Panics Before WW1

| Economic Cycle Peak | Economic Cycle Trough | Real Stock Market Price Change % from Peak to Trough | Major Causes of Recession | % Change in Industrial Production Activity | % Change in Real GDP from Peak to Trough |
|---------------------|-----------------------|--|---------------------------|--|--|
| 1809 | 1814 | -37.80 | War | | -1.60 |
| 1835 | 1842 | -46.60 | Bank War | | -9.40 |
| 1853 | 1859 | -53.40 | Railroad Boom | | -8.60 |
| 1863 | 1865 | -22.50 | Civil War | | -6.20 |
| 1875 | 1877 | -26.80 | Railroad Boom | | |
| 1881 | 1885 | -22.20 | Railroad Boom | | |
| 1892 | 1894 | -16.40 | Silver Agitation | | -3.00 |
| 1902 | 1904 | -19.40 | Rich Man's Panic | | |
| 1906 | 1907 | -22.30 | World Financial Crisis | | -6.90 |
| 1916 | 1918 | -42.50 | War | | |

Table 1b A U.S. History of Booms, Busts, and Panics After WW1 as Classified by NBER

| Economic Cycle Peak | Economic Cycle Trough | Inflation Adjusted Dow Jones % Change, Peak to Trough | Major Causes of Recession | % Change in Industrial Production Activity |
|---------------------|-----------------------|---|---|--|
| 1918 | 1919 | 7.70 | Post WWI and Spanish Flu adjustment | -6.20 |
| 1920 | 1921 | -34.40 | Postwar recession | -32.50 |
| 1923 | 1924 | 4.70 | Adjustment/correction | -18.00 |
| 1926 | 1927 | 31.50 | Adjustment/correction | -6.00 |
| 1929 | 1933 | -85.40 | Stock market crash, dust bowl, higher taxes | -53.60 |
| 1937 | 1938 | -23.40 | Attempt to balance the budget | -32.50 |
| 1945 | 1945 | 16.30 | Peacetime demobilization | -35.50 |
| 1948 | 1949 | 10.70 | Postwar adjustment | -10.10 |
| 1953 | 1954 | 18.90 | Peacetime demobilization | -9.50 |
| 1957 | 1958 | -5.90 | Fed raised rates | -13.60 |
| 1960 | 1961 | 10.00 | Fed raised rates | -8.60 |
| 1969 | 1970 | -0.80 | Fed raised rates | -7.00 |
| 1973 | 1975 | -6.60 | OPEC embargo, wage-price controls, ending gold standard | -13.10 |
| 1980 | 1980 | 6.80 | Fed raised rates | 6.60 |
| 1981 | 1982 | 9.10 | Fed raised rates | -9.40 |
| 1990 | 1991 | 0.30 | Savings and loan crisis | -4.10 |
| 2001 | 2001 | -0.30 | Dot-com bubble bust | -6.20 |
| 2007 | 2009 | -36.30 | Subprime mortgage crisis | -17.30 |

John Maynard Keynes (Keynes 2007, Leijonhufvud 1968, Minsky 1975) is usually attributed to espousing the theoretical underpinnings for stimulative policy during economic downturns. He is the father of, what is now being employed and characterized as stimulative monetary and fiscal policy. The austerity schools claim that the market will generate solutions without government intervention all in its own time and its own way. Hayek (1944) and Schumpeter (Anderson, 2011) theorize that, in fact, the process by which businesses and economies fail engenders learning and a rebirth from the ashes of the economic “creative destruction” (DeLong 2007). We believe the record is clear that stimulative policy at the right time will mitigate recessions and can be utilized, if appropriately designed, to restart the economic engine and restore private sector confidence.

Table 2 compares the causal features of the downturns of 1873, 1929 -1933, and 2007 - 2009. We have also added information about the 2020 downturn, of course, a saga that is incomplete, but provides interesting comparative highlights, especially with the 2007-2009 and 1873 economic downturns and recoveries. As we shall explain later in the paper, the 1873 Long Depression and the 2007 -2009 downturn, the latter followed by 10 years of slow growth, are more similar than the Great Depression of 1929-1933. Both of these prolonged periods of economic malaise benefited from significant technological advances. In the case of the 1873 Long Depression, the technological advances were the steam engine, electrification, railroads, ports and steamships. In the recovery of the 2007 - 2009, financial technology was a culprit and the upswing related to the spurt in information technology and biotechnology. In many ways, the 2020 downturn will depend upon recovery that is related to information technology improvements (e.g., virtual encounters such as Zoom and technology driven retail activity) and biotechnology (e.g., the creation of medical therapeutics and vaccines).

Table 2 Comparing Fundamental Causes for Significant Economic Downturns in the U.S.: 1873, 1929-1933, 2007-2009, and 2020

| |
|---|
| <p><u>1873 Long Recession Causes</u></p> <ul style="list-style-type: none"> • American deflation • Rampant speculative investments (overwhelmingly in railroads) • Demonetization of silver in Germany and the U.S., ripples from economic dislocation in Europe resulting from the Franco-Prussian War (1870-71) • Major property losses in the Chicago (1871) and Boston (1872) fires <p><u>1929-1933 Great Depression</u></p> <p>Economic Domino Effect:</p> <ul style="list-style-type: none"> • The Roaring 20s • Ensuing global crisis • Stock market crash • Dust Bowl • Smoot-Hawley Tariff Act • Bank failures <p><u>2007-2009 Global Financial Crisis/Recession Causes</u></p> <ul style="list-style-type: none"> • Breakdown of trust between banks in 2007, leading to subprime mortgage crisis/risk loans • Bust of housing bubble • Globalization and economic financial contagions • Deregulation in the financial industry permitted banks to engage in hedge fund trading with derivatives |
|---|

(Continued...)

(Table 2 Continued)

| <u>2020-? Coronavirus Pandemic Downturn</u> |
|--|
| <ul style="list-style-type: none"> • Covid-19 pandemic generated economic shock, with unemployment surge (11%) and economic downturn (30 percent +) • Policy faux pas intensifying Covid-19 spread • Inadequate fiscal policy stimulus • Politics of income and race inequality • Sectoral differences (e.g., tech vs. manufacturing) • Global disruption and trade wars |

Sources: Glasner and Cooley (1997), Persons et al. (1920), and Zarnowitz (1996).

4. The Panic of 1873 and the Ensuing Long Depression

The Panic of 1873 was a financial crisis that precipitated a severe international economic depression in Europe, the U.S., and elsewhere that lasted at least until 1879, and even longer in some countries. The Panic of 1873 and the ensuing recession known as the “Long Depression” followed the decision of Germany to abandon the silver standard as part of its bimetallism policy in 1871 in the wake of the victory of Prussia in the Franco-Prussian War. At the war’s close, Otto Von Bismarck extracted a large indemnity in gold from France and a now unified Germany ceased minting silver thaler coins. This effectively constrained the growth of the money supply in continental Europe, which in turn affected real growth capacity in the region. The first symptoms of the crisis were the financial failures in the Austro-Hungarian capital, Vienna, which spread to most of Europe and North America by the end of 1873.

A booming stock market in central Europe reached a fever pitch and there were fears of a bubble. A subsequent panic in Vienna beginning in April 1873 led to the collapse of the Vienna Stock Exchange on May 8, 1873, and continued through May 10, when the Vienna Stock Exchange suspended trading. When it reopened 3 days later, the panic seemed to have faded, and appeared confined to Austria-Hungary. The financial panic made the trans-Atlantic voyage to America only months later on what has been called “Black Thursday”, on September 13, 1873. The failure of the Banking House of Jay Cooke and Company appears to have been the trigger event. The Northern Pacific Railway had been given 40 million acres of public land in the West, and had commissioned Jay Cooke to raise the enormous sum of 100 million dollars (i.e., over 10 billion USD in 2013 dollars⁶) in capital to invest in the construction of a new rail system through the newly acquired land. The bank failed when the bond issue scale made it unsellable, and was shortly followed by several other related major bank failures. These events led to the eventual closing of the New York Stock Exchange for 10 days on September 20, 1873 (Chernow, 1998). In

⁶ Williamson (2014)

Britain, the crisis of 1873 ushered in two full decades of relative stagnation, which ultimately played a significant role in the weakening of Britain's economic leadership in the world.

The Panic of 1873, and the subsequent depression had several other underlying causes, of which economic historians debate their relative importance. The post Franco-Prussian war (and the post U.S. Civil War) inflation, rampant speculative investments, over-investment in the new transportation technologies of railroads in the U.S. and shipping and ports in Europe, a large trade deficit ripple from economic dislocations in Europe caused by the Franco-Prussian War, and significant property losses in the Chicago fire in 1871, and the Boston fire in 1872 created massive strains on the financial system.

4.1 Germany and Austria

A process of over-expansion was taking place in Germany and Austria, in which the period from the German unification in 1871 to the crash in 1873 came to be called the *Gründerjahre* (Founders Years). A liberalizing incorporation law in Germany gave impetus to the foundation for new enterprises such as the Deutsche Bank. Euphoria over military victory against France in 1871, and the influx of capital from the payment by France of war reparations fueled stock market speculation in railways, factories, docks, steamships, and spillover investments into the U.S. especially in railroads. It was the immediate aftermath of the German victory over France that began the process of silver demonetization. The process began in 1871, and culminated in the introduction of the Gold Mark as a currency of the new "United" Reich, replacing silver coins of all constituent lands. Germany was now on the gold standard. Demonetization of silver was to become the currency practice on both sides of the Atlantic Ocean.

4.2 Great Britain

The construction of the Suez Canal, which opened in 1869, was another factor that contributed to the Panic of 1873. Before the construction of the canal, goods from the Far East were carried in sailing vessels around the Cape of Good Hope, and stored in British warehouses for re-exporting to continental Europe. The Suez Canal, paradoxically financed largely by British capital, was less successful than anticipated; sailing vessels were not adaptable for use through the Suez Canal, because the prevailing winds of the Mediterranean Sea blow from west to east. In Britain, the failure of the Suez Canal resulted in bankruptcies, escalating unemployment, a halt in public works, and a major trade slump that lasted arguably until 1897.

4.3 United States

A boom in railroad construction followed the American Civil War with 33,000 miles of new track laid across the country between 1865 and 1873. Much of the craze in railroad investments was driven by government land grants and subsidies to the railroads. At the time, the railroad industry was the largest employer in the U.S. outside of agriculture, and involved large amounts of money and degrees of risk. A large infusion of cash from speculators (domestically and internationally) caused explosive, unsustainable growth in the industry as well as overbuilding of docks, factories, and ancillary facilities. In essence, too much capital was involved in projects that offered no immediate or early returns.

The decision of the German empire to cease minting silver coins put downward pressure on the price of silver, which had an immediate impact in the western U.S. where much of the world's silver supply was being mined. As a result, the U.S. Congress passed the Coins Act of 1873. Before the Coins Act of 1873, the U.S. had backed its currency with both silver and gold, and minted both types of coins. The Coins Act of 1873 moved the U.S. to a de facto gold standard, which meant that it would no longer buy silver at a statutory price or convert silver from the public into silver coins, although it would still mint silver dollars for export in the form of trade dollars. The Coins Act of 1873 had an immediate effect, depressing silver prices. This hurt the west and helped stifle and depress railroad investments as well.

The failure of Jay Cooke Bank was followed quickly by that of Henry Clews which set off a chain reaction of bank failures that temporarily closed the New York Stock Exchange (NYSE). Factories began to lay off workers as the U.S. slipped into a depression. The effect of the panic was quickly felt in New York, and more slowly in Chicago, the economic capital of the Midwest, and moved westward, affecting Virginia City, Nevada, the center of silver production, and San Francisco, the western most economic capital of the U.S.

To add to the problems, when American railroad unions commenced the great railroad strike of 1877, it prevented trains from moving, especially in Pennsylvania and Ohio. With railroad problems, the economic conditions in Chicago began to deteriorate. A second business slump reached California in 1878. The tension between the workers and legions of the banking and manufacturing interests lingered on well after the depression, which lifted in the spring of 1879; the end of the crisis and recession coincided with, and was fostered by the great wave of immigration into the U.S., which lasted until the early 1920s.

4.4 Why Did the 1873-1879 Recession End?

Friedman and Schwartz (1963) blame much of the prolonged economic crises during 1873-1879 on the imposition of a new gold standard. This forced a shift into a currency with a constrained supply and unable to respond to demand, thus causing a series of economic-monetary contractions that dotted the entire period of the Long Depression.

In the U.S., Congress passed a legislation called the Inflation Bill of 1874, a year after the 1873 crash, which was designed to confront the issue of falling prices by injecting greenbacks into the money supply. Under pressure from the business community, President Grant vetoed the measure. In 1878, Congress, under President Hayes, passed the Sherman Silver Purchase Act in a similar, but more successful, attempt to promote a period of easy money. Stimulative monetary policy, combined with technological change, a growing U.S. population, and a new railroad boom brought the U.S. out of the recession, and launched a new epoch of prosperity.

A significant deflation, especially in Europe, commencing in the 1870s was paradoxically a reflection of advances in productivity. Real unit production costs in Europe for most final goods declined steadily though out the latter quarter of the 19th century. These productivity gains were the consequences of an incredible harvesting of technological advances, highlighted by electrification, railroads, ports, and the efficient reshaping of trade routes through the Suez Canal because of steam shipping. Even though prices were falling, profit margins were not declining, and similarly, even though nominal wages at best stayed constant, real wages tended to be increasing.

In Britain during 1873-1896, industrial production increased 40%; but increased 100% in Germany. A comparison of capital formation rates in these two countries provides a substantial explanation for the different industrial growth rates. During the Long Depression, the British ratio of net national capital formation to net national product fell from 11.5% to 6%, while that of Germany rose from 10.6% to 15.9% (Musson, 1959; Rosenberg, 1943). In essence, during the course of the Long Depression, Britain adopted a course of relative fiscal austerity; and Germany stimulated effective demand and expanded industrial supply capacity by increasing and adjusting capital formation. Germany increased investments drastically with regard to social overhead capital, such as the creation of an efficient electric power generation system and transmission grids, roads, and railroads. These forms of investment stagnated or decreased in Britain, which resulted in differences in capital formation and significantly divergent growth rates for industrial production in the two countries. This might be considered an example of the consequences of austerity versus stimulative public policies. A most interesting phenomenon is that deflation does not necessarily need to be inconsistent with growth as long as there is sufficient technological-productivity growth.

5. A Comparison between the Cycle of 1873 and the Global Financial Crisis 2007-2008

The Panic of 1873 and its ensuing deep recession have interesting and compelling parallels with the GFC of 2007-2008. First, the trigger events are tantalizingly similar. The Panic of 1873 had financial institutions and stock market crashes analogous to the GFC investment bank failures (e.g., Lehman Brothers, Merrill Lynch, Bear Stearns) followed by a seizing-up of capital markets, failures of other financial institutions, and a stock market crash. In both the Long Depression and the GFC, shadow banking and its ability to conduct banking functions with reduced regulatory scrutiny played an important role in the economic and financial demise. Furthermore, the issuance of debt securities played a remarkable role in both crisis episodes. In the Long Depression, the over-investment in railroads and ports, much of it financed by debt, mirrors the over-investment in housing, supported by the subprime lending and mortgage-backed securitization. “Trigger events” in each episode exposed the underlying financial weakness, which eventually spilled over into the domestic and international real sectors. There are other more subtle similarities and differences. First, there was a major contagion effect for both recessions. Starting in 1873, the economic crises traveled from Germany and Austria to England, and on to the U.S. and other parts of the world. In the GFC, what appeared to be an American housing finance problem evolved into housing finance problems in many countries around the world, and subsequently had substantial spillovers into the financial and real sectors beyond those of housing. The debate between austerity and quantitative easing was rife during the Long Depression. The English, to their chagrin, followed a policy of relative austerity that caused their gross domestic product (GDP) to grow much slower for twenty years than Germany. During the GFC and its aftermath, this debate still continues to be rampant. The U.S., as well as China and Japan, deployed, again, a quantitative easing strategy, while much of Europe explored austerity as a solution for their problems. Europe’s choice of austerity was probably the most tragic and inexplicable analogy between the two crises.

Another similarity between the Long Depression and the GFC is related to currency exchange rates and trade policy. After the decline in economic activity in 1873, the European countries attempted to “export their way out of their economic problems.” They did this by seeking economic colonization of new markets in developing parts of the world, especially Africa. In the aftermath of the GFC, many countries have adopted an export-to-grow strategy. This, was, in part, done with currency devaluation to improve the competitive export pricing of a country. The U.S. has engaged in a steady and staunch policy of devaluing the dollar since 2008. The Chinese have been long-term players in the strategy for maintaining an undervalued yuan. More recently, Japan is seeking to improve its export competitiveness through domestic inflation and devaluation of the yen. The implementation of these protectionist and pseudo-

protectionist strategies in the past have always intensified international friction, and are likely to continue to do so in the 21st century.

Finally, as has been the case in both the 1873 Long Depression and the GFC, there is always concern during a severe economic downturn about deflation. In the GFC, significant asset deflation occurred with a relatively low overall rate of inflation. In the Long Depression of the 1870s, there was genuine deflation for an extended period of time (about 20 years in some countries). The deflation in the 1870s was not inconsistent with the revival of vigorous economic growth. The investment in improved technology for transportation networks permitted production costs to fall faster than output prices (creating increased profit margins for companies). A similar profit margin effect has been a concomitant of the GFC because corporations have been able to reduce costs quickly through technological innovations and labor layoffs and, thereby, enhance corporate profits. All in all, recoveries do eventually occur, but not without major dislocations as was true in 1873, and appears to be true in the aftermath of the GFC.

6. U.S. Banking Panic of 1907⁷

The backdrop for the U.S. banking panic of 1907 (Panic of 1907) was a deep recession and a 50% implosion in stock market prices. During the Panic of 1907, there were numerous runs on banks and trust companies. The Panic of 1907 eventually spread to the U.S., where many state and local banks and businesses entered bankruptcy.

The panic was triggered in October 1907 when the Knickerbocker Trust Company in New York City collapsed because of its financing of some imprudent stock transactions. The main business of a trust company is to serve as a trustee for individuals, corporations, and estates, and it is technically not a bank. A trust company would use the proceeds of its trust funds to invest for its underlying clients. It is, in today's parlance, a shadow bank: that is, it is not regulated as banks usually are, but carries on most of the businesses of handling deposits and making loans and other investments in ways that are very similar to regulated commercial banks.

The collapse of the Knickerbocker Trust Company led to a run on other banks and other trust companies. J.P. Morgan forged a number of stop gap measures, including obtaining financial commitments from the U.S. Treasury and other New York banks as well as the wealthiest elite of New York (including John D. Rockefeller) to support the floundering financial institutions. J.P. Morgan

⁷ This section is derived and based upon the following works: Bruner et al. (2007), Chernow (1998), Friedman and Schwartz (1963), Kindleberger and Aliber (2005), Sprague (1910), and Tallman and Moen (1990).

helped shore-up the banking system. His first action was to save the Lincoln Trust Company, thus stemming the would-be crisis. Although the panic spread, it was eventually quelled by the actions of J.P. Morgan and others by restoring confidence in the banking system. This Panic of 1907 episode eventually gave rise to a Federal Commission that recommended the creation of the Federal Central Bank, a recommendation subsequently passed by Congress which established the Federal Reserve System in 1914.

In recent times, investment banks and hedge funds are shadow banks, conducting many transactions that are not recorded on the conventional balance sheet, and are not necessarily transparent to regulators, but are basically banking functions. That is, shadow institutions are not subject to the same prudent regulations of depository banks, so they do not have to maintain financial reserves that reflect their risk exposure.

Just as in 1907, the shadow banking system (with institutions like the Knickerbocker Trust) led to a financial crisis. In June 2008, Timothy Geithner, then President and CEO of the New York Federal Reserve, claimed that shadow banks play a significant role in the freezing of credit markets when they experienced a run on their deposits (Geithner, 2008). The rapid increase in the dependency of bank and non-bank financial institutions on off-balance sheet entities to fund investments had made them critical to the credit markets underpinnings and the financial system as a whole. The collapse of the shadow banking system in 2008, as in 1907, led by the demise of the Lehman Brothers and Merrill Lynch, required coordinated intervention by other private financial institutions and the U.S. government. Again, nothing seems to be new under the sun.

7. Confluence of 1997 Asian Flu, 1998 Russian Financial Crisis and the Long-term Capital Management Debacle

Three financial crises in 1997-1998, the Asian Financial Crisis (dubbed the Asian Flu), the Russian Financial Crisis (the Ruble Crisis), and the Long-term Capital Management (LTCM) financial debacle, were mutually reinforcing. In each case, the basic architecture for all three crises was predicated on a combination of over-leverage, inappropriate debt strategies, and lax regulation. All it took was a spark, i.e., an external shock, to cause economic conflagration.

7.1 1997 Asian Financial Crisis⁸

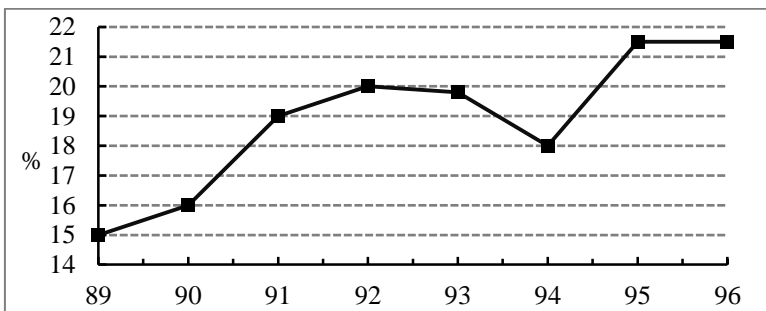
The Asian Financial Crisis gripped much of Asia beginning in July 1997, and raised concerns that there might be a worldwide economic meltdown generated through financial contagion. The spark for the crisis occurred in Thailand with the financial collapse of the Thai baht when the Thai government had to float its currency (because it lacked sufficient foreign currency to support its fixed exchange rate). By cutting the “peg” to the U.S. dollar (after exhaustive efforts to support the baht), the situation unraveled quickly. The underlying cause for the Thailand Financial Crisis was significant debt over-extension, in part driven by a local real estate boom. At the time, Thailand had acquired a burden of foreign debt that made the country effectively bankrupt even before the collapse of its currency. The Thailand crisis engendered a contagion for most of Southeast Asia and Japan: each of the countries found themselves in positions of slumping currencies, precipitous declines in the local stock market, as well as other local asset markets, and a pernicious increase in private debt.

As seen in Figures 1 and 2, the Asian countries had two interrelated debt issues:

1. Building-up to the 1997 crisis, short-term external debt was growing relative to the overall debt; and,
2. Private external debt of the Asian countries was growing as a proportion of the total external debt.

In essence, as the local currency slumped, the burden of repaying the foreign debt in local currency would increase, and since the debt was short-term, the need for repayment or restructuring would leave little margin for error. As events unfolded, this short-term private debt unwound as the currency devalued, making repayment virtually impossible. The ratio of the value of foreign debt to the value of the GDP rose as the local country currency declined.

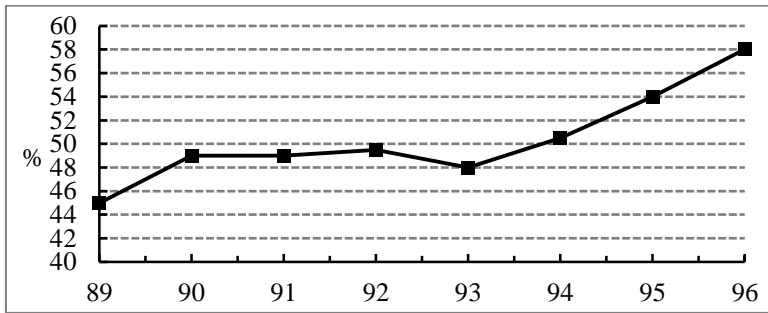
Figure 1 External Debt of Asian Countries: Ratio of Short-Term to Long-term



Source: IMF; EIU Country

⁸ This section is derived and based upon the following works: Ngian (2000), Pempel (1999), Pettis (2001), Radelet et al. (1998), Stiglitz (1996), and Tiwari (2003).

Figure 2 Private External Debt of Asian Countries as Proportion of Total External Debt



Source: IMF; EIU Country

In turn, as credit dried up, the wheels of the economy unhinged. From June 1997 to July 1998, the Thai baht declined 40% as its gross national product (GNP; measured in real terms) also declined by 40%. For Indonesia, the situation became even worse; between June 1997 and July 1998, its currency declined over 80% as did its real GNP. The South Korea won during this period declined approximately 34% as did its real GNP (Cheetham, 1998).

The International Monetary Fund interceded by creating a 40 billion dollar capital program to stabilize the currencies of South Korea, Thailand, and Indonesia. Without this external assistance, these economies would have experienced prolonged downturns. Even with the IMF assistance, it took until 1999 for this region to stabilize (Radelet et al., 1998).

Krugman (1994) has published an article which suggests that the “Asian economic miracle” (the precursor to the Asian Financial Crisis) was fundamentally unsound. Professor Krugman argues that the economic growth in East Asia had been the consequence of increasing the level of investment in unproductive capital projects. He claims that fundamental economic productivity, at best, had increased only marginally and that only the growth in productivity, and not just mere capital investment, would lead to long-term sustainable prosperity. That is, without sufficient productivity growth, the ability of these countries to repay their loans would ultimately be questionable. Whether his explanation is correct or not, the over-extension of debt in the private sectors was unquestionably the kindling wood ignited by the spark from the Thailand baht collapse.

7.2 The Ruble Crisis⁹

The Russian Financial Crisis, also dubbed the “Ruble Crisis” and/or the “Russian Flu,” was gestating for several years prior to the actual events that unwound with the Russian government devaluing the ruble and defaulting on its debt in late 1998. Declining productivity, an artificially high fixed exchange rate for the ruble and a chronic fiscal deficit were the fundamentals that led to the crisis. Two external shocks, the Asian Financial Crisis in 1997 and the subsequent decline in demand causing price declines for crude oil and non-ferrous metals severely affected Russian foreign exchange reserves. The two most valuable sources of capital flows in Russia emanated from exports of energy and metals. Given its fragile economy, the rapid decline in the price of these two sources of external capital produced a tectonic economic slowdown, with GDP per capita declining, unemployment soaring, and global investors liquidating their Russian assets.

After a number of policy actions and internal political changes, followed by a 22.6 billion dollar International Monetary Fund and World Bank joint “rescue package” in July 1998, the economic situation kept unraveling and the weakness of the ruble accelerated. As is frequently the case, once confidence has been lost, it is difficult to restore.

It is argued by some that the inability of the Russian government to implement a coherent set of economic reforms led to the severe erosion in investor confidence, and the chain of events that are analogous to a run on the Central Bank. Investors fled the market by selling rubles and Russian assets, including Russian governmental bonds, which put added downward pressure on the value of the ruble. These forces were attributed to the increased spending of foreign reserves of the Russian Central Bank to defend the ruble. Eventually, it could no longer do so. In August 1998, the Russian government devalued the ruble, defaulted on domestic debt, and declared a moratorium on the payment to foreign creditors.

In brief, the crisis in confidence, which could not be halted, combined with the large external debt and internal national mismanagement, led to the ultimate Ruble Crisis. The results internally were far flung. Their GDP plunged, and because of the devaluation of the ruble, there was significant domestic inflation (i.e., in 1998, Russian inflation was over 80%).

Surprisingly, the recovery was substantial and rapid. It was not new, clever, or innovative governmental economic management that fostered the recovery, but rather an expeditious recovery in energy prices. Perhaps it is better to be lucky than good in these circumstances.

⁹ This section is derived and based upon the following works: Gaidar (1999), Gould-Davies and Woods (1999), Pinto et al. (2004), and Stiglitz (2003).

7.3 Long-term Capital Management Crisis¹⁰

The LTCM was a hedge fund management firm owned and operated by the so-called elites of Wall Street managers and the financial cognoscenti, including two Nobel Prize winners. From 1994 until the ultimate imploding of the LTCM in 1998, this hedge fund had been extraordinarily successful. However, it lost 4.6 billion dollars in less than 4 months in 1998 following the Russian Financial Crisis (which had a causal impact discussed below), thus requiring financial intervention by the Federal Reserve Bank of New York. The LTCM had a set of financial strategies that sought out mis-pricing within a market or between markets that could be exploited to generate small profits, and then with significant leverage, the small profits could be mushroomed to large rates of return. Much of their strategic investment was known as “convergence investing¹¹.”

The 1998 Russian Financial Crisis in August and September, when the Russian government defaulted on their government bonds, caused panic among investors. These investors sold Japanese and European bonds to buy safe-haven U.S. Treasury Bonds. The LTCM profits that were supposed to occur as the value of these international sovereign bonds converged became huge losses as the value of the bonds diverged. At the end of August 1998, the LTCM had lost 1.85 billion dollars of its capital (Lowenstein, 2000)¹². From this point forward, a chain reaction started to exacerbate most LTCM positions, eventually leading to the Federal Reserve Bank of New York organizing a bailout for 3.625 billion dollars by major creditors (i.e., banks that had been in many cases involved in funding the LTCM). These actions were taken in order to avoid a wider collapse in the financial markets. It is probably true that a wider financial collapse would have occurred if the LTCM had been permitted to fail in 1998. Again, the lesson is that over-leverage creates an incubator for an unanticipated shock to wreak havoc in the financial markets, with possible spillover into the real economic markets.

¹⁰ This section is derived and based upon the following works: Coy and Wooley (1998), Dunbar (2000), and Lowenstein (2000).

¹¹ The LTCM used complex mathematical models to take advantage of fixed income arbitrage opportunities called convergence trades, usually with U.S., Japanese and European government bonds. Government bonds yield a fixed term debt obligation, which signifies that they will pay a fixed amount at a specified term in the future. Differences in various bonds present values are minimal, so any difference in price is minimal. Therefore, according to the economic theory, any differences in prices will be eliminated by arbitrage. In this way, these small discrepancies rose in the market and would be locked-in waiting for the convergence to occur.

¹² Lowenstein (2000) provides an analysis of how convergence strategy can go awry, especially in his discussions on pages 95-99 about the Shell Oil Company convergence trades.

7.4 1997-1998 Episodes: Repeating History

In brief, all of the three financial 1997-1998 crises had similarities with the 1873 and 1907 crises. First, the extensive use of debt colors the backdrop. An unanticipated event (“economic shock”) creates the spark to ignite the crisis. Finally, the unwinding of the crisis, once underway, if not addressed immediately and proactively, will lead to a contagion effect well beyond the borders of the original crisis (i.e., geographically, financially and economically).

8. The Current Situation: What Should We Have Learned from the Past?

In the title of our paper, we employ the species *Cygnus*, more commonly known as the Swan. Many people claim financial disasters cannot be anticipated, which conjures up the now (in)famous “Black Swan” of Taleb (2007). In fact, there are 7 sub-species of *Cygnus*, most of which are not entirely black. That is, there usually are major warning signs on the path to crisis. In our discussion of the historical crises of 1873, 1907, and 1997-1998, we note many pre-crisis signals that were not taken into account as these crises evolved. In examining the GFC of 2007-2008, the U.S. Congress established The Financial Crisis Inquiry Commission (FCIC). The FCIC summarized its findings in January 2011 as follows:

“While the vulnerabilities that created the potential for crisis were years in the making, it was the collapse of the housing bubble--fueled by low interest rates, easy and available credit, scant regulation, and toxic mortgages--that was the spark that ignited a stream of events which led to a full-blown crisis in the fall of 2008. Trillions of dollars in risky mortgages had become imbedded throughout the financial system, as mortgage-related securities were packaged, repackaged, and sold to investors around the world. When the bubble burst, hundreds of billions of dollars in losses in mortgages and mortgage-related securities shook markets as well as financial institutions that had significant exposure to those mortgages and had borrowed heavily against them. This happened not just in the United States, but around the world. The losses were magnified by derivatives such as synthetic securities.” (The Financial Crisis Inquiry Commission, 2011).

On its website, the FCIC avers:

“The Commission concluded that this (GFC) crisis was avoidable – the results of human actions, inactions, and misjudgments. Warnings were ignored. ‘The greatest tragedy would be to accept the refrain that no one could have seen this coming and thus nothing could have been done. If we accept this notion, it will happen again.’ (Rock Center for Corporate Governance and Stanford Law School, n.d.)

Put somewhat differently, like all previous cycles of booms and busts, the seeds for the subprime meltdown were sewn earlier. In 2001, the U.S. economy experienced a mild short-lived recession. Although the economy withstood terrorist attacks, the bust of the dot.com bubble, and the Enron, Global Crossing, and other accounting scandals meant that the fear of recession preoccupied the Federal Reserve. To keep a recession at bay, the Federal Reserve lowered the federal funds rate 11 times (from 6.5% in May 2000 to 1.75% in December of 2001), which created a flood of liquidity into the economy. This was the essential ingredient – cheap money – needed to fuel the housing finance and refinance boom.

This environment of easy credit and the upward spiral in home prices by investments in higher yielding subprime mortgages resembled the gold rush. The Fed continued to slash interest rates, emboldened by perhaps continued low inflation despite lower interest rates. In June 2003, the Fed lowered interest rates to 1%, the lowest rate in 45 years. The entire financial market expanded its use of leverage in order to augment profits. Home loan profits were rising, corporate profits were growing, investment banks were creating huge gains for themselves...but, there was a dark side yet to be realized. Eventually, the risks started to emerge. The trouble started when interest rates rose and homeownership reached the point of saturation. From June 30, 2004, onward, the Fed started to raise interest rates, so that by June 2006, the federal funds rate had risen to 5.25%, and remained unchanged until August 2007.

There were many early signs of prospective distress. During the last quarter of 2005 and early 2006, home prices started to sag, which led to a 40% decline in home construction between 2004 and 2006. Not only were new homes being affected, but many subprime borrowers now could not withstand the higher interest rates and started defaulting on their loans. Simply put, there were signs along the way that indicated that the GFC could happen. In summary, the signposts were similar to those of earlier boom-bust financial economic cycles:

- Overleverage and the use of expansive debt became clear.
- The shadow banking industry (the investment banks) found new vigor in securitization, especially for residential mortgages, and were not subject to the scrutiny and regulation in the same way as commercial banks.
- Asset bubbles appeared in many markets, from the stock and bond markets to housing, to wine and fine art.

When the boom turned to bust, it unwound horrifically, spreading from the financial sector to the real sector, and impairing most parts of the global financial system and world economies.

8.1 2020 COVID - 19 Pandemic Recession (Depression?): An Unfolding Saga

While it is too early to write a definitive story about the unfolding 2020 COVID 19 pandemic and its global non-economic and economic effects, the usual precursors for a deep recession are obvious and omnipresent as of this writing in 2020. First, after the GFC subsided in time and memory, there was an extensive rebuilding of private and public debts. Second, there were a set of other factors that created a socio-economic environment that exacerbated the economic fragility of the apparent economic boom. These precursors, among others, included the following:

- The buildup of private sector corporate debt as well as significant increases in consumer debt,
- The growth in federal debt and deficit, unnecessarily intensified by the 2017 Trump Tax rollback,
- The continued Federal Reserve policy of low interest rates and easy money,
- The systematic approach to deregulate governmental controls on the environment and pollution, climate change, financial institutions, consumer protection and so on and so forth,
- The overconfidence in the boom with steady positive economic growth, record low unemployment and significant increased valuations in the asset markets, such as equity stocks and real estate – a classic boom,
- The intensifying inequality between low income, especially the income of minorities, and high income households, with the digital divide amplifying inequality, and
- The choice of international policies that has deepened economic and political uncertainties, e.g., trade wars with Europe, Canada, and China; heightened international hotspots, e.g., Iran, China/Hong Kong, North Korea, Syria; bungling of alliances and treaties, e.g., withdrawal from the Trans Pacific Partnership and Paris Accord, and frivolous and unnecessary alienating actions with our NATO allies.

With these precursors as the backdrop, the COVID - 19 pandemic struck, with devastating global contagion that has affected economic activities worldwide. There had been important recent warnings that global disease transmission was a real threat to the global economy (e.g., SARS, MERS, Ebola). These warnings remained unheeded. It has become apparent that federal U.S. policy was slow to recognize the potential impacts of COVID 19 as well as perceptibly unable to create a set of policies to combat the national health risks and ensuing economic dislocations.

Let us address the solutions for the 2020 COVID 19 pandemic. One cannot fix the economy until the populace is assured of its post—pandemic health, well-being and safety. This is not an easy fix, but the necessary predicate for

reinvigorating economic activity. The reopening of the economy will require thoughtful public economic policies, once the health related uncertainties of COVID 19 are resolved. Assuming that we will achieve the goals of resolving the health uncertainties of COVID 19 and restart economic activity, amazingly and perhaps not surprisingly, there will remain fundamental policy issues that pertain to reducing financial sector volatility and risk. These new necessary financial and economic policies remain as an outgrowth of inadequate policy decision-making since the GFC. This is the key focus of this paper.

8.2 What Should Be Done to Fix the Financial System?

As we view the economic and financial environment after the GFC and before 2020, we observe an increasingly overt fragility. These issues will remain after we resolve the current pandemic. We observe that two of the three largest economic zones, the Euro zone (the largest economic zone) and China (the third largest economic zone) are shaky and appear to be prone to major economic declines. Until the pandemic occurred, the North American economic zone (the U.S. and Canada), while perhaps doing better than China and the Euro zone, would not be classified as robust.

Clearly, the Post-GFC U.S. economic recovery has benefitted from easy credit. The Federal Reserve, pursuing a policy of quantitative easing by buying \$85 billion of debt per month to buoy mortgage bonds and treasury markets, has been a crucial instrument for fostering recovery. If the Fed was to taper its bond purchase program, as it had planned, and if interest rates were to rise, the net worth of the Federal Reserve balance sheet would plummet. Cheap leverage has been utilized by the entire investor spectrum from hedge funds to core investors to boost their returns. Much of this financing is done short term, and if interest rates were to rise, substantial amounts of wealth could be destroyed. Ordinary households face this issue in a different way. With housing prices rising again, households are returning to purchasing and owning houses, usually with significant amounts of debt, i.e., mortgages. Many of these mortgages are adjustable rate instruments. If interest rates were to rise from their historic lows, many households could find themselves financially stressed even if real estate values continue to rise. A rise in interest rates is also likely to dampen new residential construction. In brief, one could conjure up a likely scenario in which the U.S. economy slows substantially.

While it is beyond the task of this paper to create new prescriptions for the global economy, it is clear that the governments of the world must take a forceful stand to reregulate the financial system. This requires the introduction of laws and regulations that cannot be circumvented, and regulators who have the courage and motivation to pursue active enforcement. In addition, regulators need to become more agile than they have been historically. Innovation in the financial markets is omnipresent and will continue to be so.

Regulators need to have a watchful eye on those who are attempting potentially dangerous financial innovations that circumvent and avoid regulatory control.

Is there a basic principle that needs to be employed in the creation of new laws and in their enforcement by regulators? The simple answer is yes! In financial transactions, the participants (investors, sponsors, investment banks, consultants, advisors, and servicers) need to have significant capital at risk and their ultimate rewards need to be related to long-term transaction performance. That is, structuring transactions to extract immediate fees, which do not relate to the long-run performance of the underlying transaction vehicles, and/or engaging in such transactions with no capital at risk lead to misalignments of interests between and among investors, servicers, and so on and so forth. It is our hope that overarching world financial regulation will become reality, and can at least be used to mitigate and control boom and bust cycles by appropriate anticipatory and ex post responses. In the U.S., specifically, it would be prudent to enact a 21st century version of the Glass-Steagall legislation in order to separate shadow and investment banks and depository institutions. The system of credit rating agencies needs to be reconstructed to disentangle the socially perverse incentives between raters and ratees. The need to renovate and strengthen the Dodd-Frank legislation for controlling financial activities faces major challenges in Congress; but it should be a first priority. Finally, we need to consider seriously long-run structural reforms for our financial system and the economy.

References

- Anderson, E.S. (2011). *Joseph A. Schumpeter, Theory of Social and Economic Evolution*. Palgrave MacMillan: London.
- Bruner, R.F. and Carr, S.E. (2007). *The Panic of 1907: Lessons Learned from the Markets Perfect Storm*. John Wiley and Sons: Hoboken, New Jersey.
- Cheetham, R. (1998) GDP and Price Changes, in *Asia Crisis*, Unpublished manuscript.
- Chernow, R. (1998). *Titan: The Life of John D. Rockefeller, Sr.*, Random House: New York.
- Coy, P. and Wooley, S. (1998, September 21). Failed Wizards of Wall Street. *Business Week*.
- DeLong, B.J. (2007, December 7). Creative Destructions Reconstruction: Joseph Schumpeter Revisited. *The Chronicle of Education Review*.
- Dunbar, N. (2000). *Inventing Money: The Story of Long-term Capital and The Legends Behind It*. John Wiley and Sons: New York.
- Friedman, M. and Schwartz, A.J. (1963). *A Monetary History of the United States, 1867-1960*. Princeton University Press, Princeton, New Jersey.
- Gaidar, Y. (1999). Lessons of the Russian Crisis for Transitioning Economies, *Finance and Development*. 36(2): 6-8
- Geithner, T. (2008, June 9). Reducing Systematic Risk in a Dynamic Financial System. Speech at the Economic Club of New York City. Available at: <https://www.NewYorkFed.org/Newsevents/speeches/2008/tfg080609.html>
- Glasner, D. and Cooley, T.F. (1997). *Crisis of 1873: Business Cycles and Depressions: An Encyclopedia*. Garland Publishing: New York Publishing.
- Gould-Davies, N. and Woods, N. (1999). Russia and the IMF. *International Affairs*, 7(1), 1-21.
- Hayek, F.A. (1944). *The Road to Serfdom: Text and Documents, The Definitive Edition, Edited by Bruce Caldwell*, Rutledge Press: UK and University of Chicago Press.
- Keynes, J.M. (2007). *The General Theory of Employment, Interest and Money*. McMillan: London (reprinted); original 1936.

Kindleberger, C.P. and Aliber, R. (2005). *Manias, Panics, and Crashes: A History of Financial Crises*, (Fifth Edition), John Wiley and Sons, Hoboken, New Jersey.

Krugman, P. (1994). The Myth of Asia's Miracle. *Foreign Affairs*, 73, 62-78.

Leijonhufvud, A. (1968). *Keynesian Economics and the Economics of Keynes*. Oxford University Press: New York.

Lowenstein, R. (2000). *When Genius Failed: The Rise and Fall of Long-term Capital Management*. Random House, New York.

Minsky, H. (1975). *John Maynard Keynes*. Columbia University Press: New York.

Musson, A.E. (1959). The Great Depression in Britain 1873-1896: A Reappraisal. *Journal of Economic History*, 19, 199-228.

Ngian, K.J. (2000). Coping with the Asian Financial Crisis: The Singapore Experience. Unpublished Paper, Institute of South Asian Studies, Singapore.

Pempel, T.J. (1999). *The Politics of Asian Economic Crises*. Cornell University Press, Ithaca, New York.

Persons, W.M., Tuttle, P.M. and Frickey, E. (1920). Business and Financial Conditions Following the Civil War in the United States. *Review of Economic and Statistics*, 2, 5-21.

Pettis, M. (2001). *The Volatility Machine: Emerging Economies and the Threat of Financial Collapse*. Oxford University Press, Oxford, England.

Pinto, B., Gurvich, E. and Ulatov, S. (2004). Lessons from the Russian Crisis of 1998 and Recovery. In *Managing Volatility and Crises: A Practitioner's Guide*, Aizenman, J. and Pinto B. (ed.), Cambridge University Press, Cambridge. pp. 406-438

Radelet, S., Sachs, J.D., Cooper, R.N. and Bosworth, B.P. (1998). The East Asian Financial Crisis: Diagnosis, Remedies, and Prospects. *Bookings Papers on Economic Activity*, 1998(1): 1-19

Reinhart C.M. and Rogoff, K.S. (2009). *This Time is Different: Eight Centuries of Financial Folly*. Princeton University Press, Princeton, New Jersey.

Rosenberg, H. (1943). The Political and Social Consequences of the Great Depression of 1873-1896 in Central Europe. *The Economic History Review*, 13, 58-73.

Rock Center for Corporate Governance and Stanford Law School (n.d.)
<http://fcic.law.stanford.edu/>

Roubini, N. and Mihm, S. (2011). *Crisis Economics; A Crash Course in the Future of Finance*. Penguin Books, London and New York.

Sprague, O.M.W. (1910). *History of Crises Under the National Banking System*. GPO, Washington, D.C.

Stiglitz, J. (2003, April 9). The Ruin of Russia. *The Guardian* (London).

Stiglitz, J.E. (1996). Lessons from the East Asian Miracle. *The World Bank Research Observer*, 11(2): 151-177

Taleb, N.N. (2007). *The Black Swan: The Impact of the Highly Improbable*. Random House, New York, 2007.

Tallman, B.W. and Moen, J. (1990). Lessons from the Panic of 1907. *Federal Reserve Bank of Atlanta Review*, 75, 2-3 1990.

The Financial Crisis Inquiry Commission (2011). The Financial Crisis Inquiry Report. Available at <https://www.govinfo.gov/content/pkg/GPO-FCIC/pdf/GPO-FCIC.pdf>

Tiwari, R. (2003). Post-Crisis Exchange Rate Regimes in South East Asia. Unpublished Paper, University of Hamburg.

Williamson, S.H. (2014). Seven Ways to Compute the Relative Value of a U.S. Dollar Amount - 1774 to Present. Available at <https://www.measuringworth.com/>

Zarnowitz, V. (1996). *Business Cycles: Theory, History, Indicators, and Forecasting*. University of Chicago Press, Chicago, Illinois.