

UNVEILING THE FINANCIAL CRISES

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Abstract

Financial crises have been occurring since the 1700s. For years, it has been believed that lack of information and the associated rising uncertainty led to crises. However, the deep penetration of the internet has drastically changed how the financial system works. Contrary to classic causation of uncertainty and financial crashes, this paper argues that it is the ‘Perceived Certainty’ during the crucial time of buildup of a crisis that actually leads to the crisis. Economic actors behave as though there is total certainty regarding key economic variables. This belief manifests in two primary outcomes: neglect of key economic variables; disregard of the effectiveness of key economic variables as measures of the health of the economy.

Keywords: Perceived certainty, financial crises, Recession, key economic variables, expectations

Introduction

‘What we know about the global financial crisis is that we don’t know very much.’ – Robert J. Samuelson (Samuelson, 1999). Financial crises have been occurring since the 1700s. For years, it has been believed that a lack of information and rising uncertainty lead to crises. However, the deep penetration of the internet has drastically changed how the financial system works. This paper derives motivation from the gap between the traditional explanations of financial crises and the current reality, one witnessing unprecedented technological change and rapid information exchange. This paper takes a step towards bridging the gap. The paper proposes that economic actors behave in a strongly certain manner during the run up to a financial crisis. It entails disregarding or deeming incompetent the predictive ability of key economic variables. The idea focuses on the pre-crisis period during which certainty is perceived by economic actors as opposed to the traditionally accentuated

uncertainty during the crisis period.

Background and Methodology

The year 2000 has been specifically chosen to mark the onset of the internet which now forms the backbone of the global financial system. In order to create a time-relevant and environmentally receptive proposition, we proceed with the premise that financial crises between 2000 and 2020 best resemble the current economy in terms of technology as well as composition of goods and services produced and traded. Whereas the work analyses all financial crises between 2000-2020 to unveil the factors that prevail at the time of birth of a crisis, in-depth analysis is offered for the following: the 2000s Recession (Tech Bubble), the Financial Crisis of 2007-08 and the European Sovereign Debt Crises of 2010-2013.

It is observed that financial crises are broadly caused by interest rate imbalances, asset market effects on balance sheets, banking sector problems, and fiscal imbalances (Mishkin and Eakins, 2011). However, these changes do not comprehensively explain the continuing behavior of economic actors during the run up to a financial crisis. Based on traditional economic theory, statistical behavior of key economic variables, and the economic impact of increased internet penetration, a theory to explain the genesis of financial crises in the economic system has been put forth.

Case Studies of Financial Crises

The 2000 Recession (Tech Bubble)

Characterized by a decline in economic activity in the European Union and the United States, the 2000s brought a global decline in Gross Domestic Product (GDP). Particularly in the United States, the crisis took the form of a rapid bubble in the technology industry. The Dotcom bubble was a speculative bubble of stock prices of Internet companies during 1995 until 2000. In two years (1998-2000), the Internet grew over 1000% of its public equity and equaled about 6% of the market capitalization in the United States (Wollscheid, 2012). It peaked on March 10, 2000 with a National Association of Securities Dealers Automated Quotations (NASDAQ) score of 5,048.62 (Pop Goes the NASDAQ, 2000). This period witnessed relentless establishment of technology companies (McCullough, 2018). The bubble burst during 2000 until 2002 when the NASDAQ lost nearly 80% of its value and over \$7 trillion in market value were destroyed (Gray, Frieder, Clark, 2007).

What created the bubble?

In 1993, Mosaic, a web browser was released. It made the internet highly famous in America Kline (2003). At the same time, a decline in interest rates increased the availability of capital leading to higher investment spending, particularly in the now famous internet industry Weinberger M. (2016). The low interest rates in the U.S. during 2001-04 were the core factors behind the increases in housing prices and household leverage. Analytical models suggest higher risk-taking when interest rates decline and a shift to quality when interest rates rise, with consequences on the availability of external funding (Stiglitz and Weiss, 1981). Empirical evidence supports such a channel because credit standards tend to loosen up when policy rates fall (Maddaloni and Peydró, 2010).

A combination of the above created *Irrational Exuberance* in the markets. It implies that the prices of assets rose above their actual value computed on the basis of discounted cash flows. In this animalistic spirit market participants ignored traditional measures such as the PE ratio and poured investment into any company with a dotcom. The market was convinced that in the new era of the internet, traditional measures did not hold merit. And based on this fallacious reasoning, profitability of a company did not qualify as a test of its merit (McCullough, 2018).

The Great Recession of 2007-08

The recession began in December 2007 and ended in June 2009. The years leading up to the 2008 crisis witnessed exorbitant rise in asset prices and associated boom in economic demand. The U.S. shadow banking system was not subject to stringent regulations, standing vulnerable to a bank run. US mortgage-backed securities offered higher yields than U.S. government bonds. Many of these securities were backed by subprime home mortgages, which collapsed when the bubble burst and homeowners began to default on their mortgage payments in large numbers.

The subprime loan losses in 2007 exposed other risky loans and inflated asset prices. With increasing loan losses and failure of the 150 year old Lehman Brothers on September 15, 2008, a major panic set in the interbank loan market resulting in huge losses, bankruptcies, and bailouts to well established banks across the United States and Europe. This resulted in a sharp drop in international trade, a steep rise in unemployment and a slump in commodity prices, setting off the Great Recession.

What caused the recession?

As the U.S. economy slowed in the early 2000s, the Federal Reserve cut

interest rates in a bid to activate the interest-sensitive sectors (Figure 1). Normally, a low interest rate increases corporate investment, but corporations had already invested remarkably during the tech bubble and had a meagre incentive to continue. Instead of corporate investment, low interest rates incentivized consumers to take housing loans.



Figure 1: United States Interest Rate

Source: Federal Funds Rate - 62 Year Historical Chart. macro.trends.net

With low rates of interest, fulfilling the American Dream became easier than ever. This led to a huge increase in housing investment and house prices went up. A large part of the housing demand came from individuals with low credit ratings — the subprime borrowers. And rising house prices offered them the ability to continue refinancing low interest rate mortgages to prevent default. Borrowers withdrew their home equity to undertake consumption for leisure. Repaying loans was neither a priority nor a compulsion.

A sharp drop in long-term interest rates from 2000 to 2005, brought about by export-oriented growth in developing economies, especially China which through saving the dollars it was earning, in effect made money available for cheap loans. Rapid expansion of credit and sharp growth in house and other asset prices were indeed associated with large capital inflows in many countries before the 2007-08 financial crisis. Securitization dealt with investors' concerns. If the mortgage was packed with securities from other areas, diversification would reduce the risk. Moreover, the riskiest claims against the package could be sold to those who had the appetite, while the safest, AAA-rated parts could be sold to foreign investors seeking safety.

The Federal Reserve Chairman conceded that the low federal funds rate made it easier for borrowers to use adjustable-rate mortgages, thereby making them vulnerable to interest rate rise. When home prices fell and another bubble seemed inherent, the Federal Reserve increased interest rates. The monthly interest payments for subprime borrowers skyrocketed and as a result, they defaulted.

Once the housing market began to crash, and borrowers were unable to pay mortgages, banks were stuck with loan losses on their balance sheets. As unemployment rose, many borrowers defaulted or foreclosed on their mortgages. Since the economy was in a recession, banks could not resell the foreclosed houses for the same price at which it loaned out to the borrowers. Therefore, banks sustained massive losses, which led to tighter lending, which in turn led to low loan origination in the economy, thereby blocking consumer and corporate access to credit and lowering economic growth.

The global financial crisis of 2008-9 had its roots in more than two decades of growing complacency in wealthy nations, a complacency whose main financial manifestation was ever-growing leverage. Bankers and households alike piled on levels of debt that would have been sustainable only if nothing ever went wrong.

Once investors witnessed the Federal Reserve allowing Lehman Brothers to fail, it led to massive consequences and sell-offs. As investors increasingly pulled money out of banks and firms, those institutions began to fall. Although the subprime crisis began in the United States' housing market, the shockwaves led to the Great Recession.

The European Sovereign Debt Crisis

A number of countries in the Eurozone – Greece in May 2010 and February 2012, Ireland in November 2010, Portugal in May 2011, Spain in July 2012 for its banks and Cyprus in May 2013 – have been taking emergency loans from the Eurozone, European Union governments, and the International Monetary Fund (IMF). With budget deficits mounting, these countries increasingly became unable to finance their deficits at the given interest rate on the market and therefore, faced the possibility of defaulting on their debts. In return for aid promised by the aforementioned, these countries were required to implement reforms called austerity measures in order to balance their budgets and sustain their economies.

What caused the crisis?

The primary goal of European integration is to maintain peace and ensure

freedom and prosperity in Europe. A single currency for the European Union (EU) coerced euro members to abdicate control of monetary policy to the European Central Bank (ECB) which sets interest rates for the entire Eurozone. This was not balanced off with a fiscal policy regulatory body resulting in irresponsible use of government revenue by certain Eurozone countries like Greece.

The system of implicit guarantees to protect weak Eurozone countries together with an illusion of prosperity across the Eurozone meant that countries like Greece, that were earlier charged high interest rates than say Germany could now borrow more cheaply, which they did. Cheap foreign credit was used to finance consumption, an oversupply of housing and to implement irresponsible fiscal policies. This fueled a buildup of debt in certain countries and led to the belief in financial markets that every country in the Eurozone had the same risk of defaulting on their loans.

Some large countries, notably Germany, had low growth which led the ECB to set a relatively low interest rate hindering growing economies like Ireland and Spain and forming housing market bubbles there. Additionally, by abdicating monetary policy and currency, countries with high debts were unable to use measures such as allowing higher inflation to reduce debt, depreciating currency to increase exports, and buying own debt to prevent default through quantitative easing programmes to their aid.

Theory of Perceived Certainty

During the build up to a financial crisis, economic actors perceive certainty towards key economic variables pertaining to the current economic scenario, which leads them into a false perception of positive developments in the economic system. The theory proposes that during the run up to a crisis, economic actors either disregard key variables as indicators of crises thereby disengaging them from the economy or collectively fail to recognize the warning levels of specific indicators because they are 'certain' of the positive status of the economy or the insignificance of the specific variables.

The said behavior is justified through Peter Wason's (1960) Theory of Confirmation Bias which brings to light the human tendency to search for, interpret, favor, and recall information in a manner that confirms or strengthens our existing personal beliefs (Plous, 1993). It implies that by neglecting a key economic variable and forming a belief without its consideration, economic actors are likely to search for, interpret, favor, and recall only the information which stands in tandem to their newly formed beliefs. Therefore, the specific economic variable is now likely to make an insignificant impact on the actions of economic actors.

Another significant amplifier to the ‘Perceived Certainty’ is the ‘Herd Behavior’ phenomenon. Mob psychology or hysteria is well established as an occasional deviation from rational behavior; in such situations, the action of each individual is rational—or would be—were it not for the fact that others are behaving in the same way. Herd Like behavior, although individually rational, produces group behavior that is, in a well-defined sense, irrational (Shiller, 2000). It implies that once formed and subsequently ascertained time and again through the confirmation bias, a belief is likely to spread through psychological contagion, amplified by the herd like behavior depicted especially in the financial markets, thereby leading to strongly ‘Perceived Certainty’ regarding health of the economy during the run up to a financial crisis.

This differs from *Irrational Exuberance* (Shiller, 2000) in that Irrational Exuberance refers to investor enthusiasm that does not take into consideration deviation from fundamental asset prices. *Perceived Certainty* has to do with a robust belief in the direction of certain economic variables and neglect of certain others.

A Perceived Certainty Variable is defined as the specific economic variable that is either neglected or deemed unsuitable for determining the health of the economy during the run up to a financial crisis.

A proportion of individuals may comprehend the warning levels of the specific indicators during the run up to a financial crisis. However, whether or not their recognition turns into effective action determines the occurrence of a financial crisis. Therefore, when referring to economic actors, this paper refers to corporations, governments, economic institutions, and authorities empowered to take action that significantly changes the course of the economy.

In the run up to the 2008 crisis, leverage ratio was the variable overlooked by economic actors as shown in figure 2.

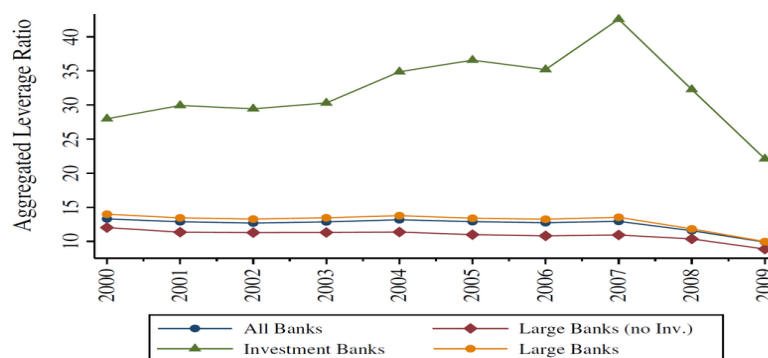


Figure 2: U.S. Banks' leverage ratio during the U.S. Great Recession
Source: Palombo Edoardo (2019)

In the run up to the 2000s recession, Price-Earnings (PE) ratio (calculated by dividing the market price of a share by the earnings per share) was the variable overlooked by economic actors. At the height of the Dot-com bubble, PE ratio had risen to 32 whereas the market average PE ranges between 20-25 and lower PE ratio may give a good investment opportunity. The collapse in earnings caused PE to rise to 46.50 in 2001. Perceived Certainty about the onset of a 'New Era' heightened by the leap into the 2000s led economic actors to overlook a traditional measure that depicted reality - PE ratio.

In the run up to the Sovereign Eurozone Debt Crisis, Debt to GDP (Gross Domestic Product) was the variable ignored by economic actors.

Debt to GDP of Greece in 2008 was 109.4% and that of Italy was 106.1%. Perceived Certainty regarding the strength of the European Union derived from Germany, UK, and other European Union (EU) countries stood testament (as perceived) to lenders of the credibility of Greece and Italy. It misled them into disregarding a traditional measure of credibility of governments - Debt to GDP.

Table 1 summarizes the perceived certainty variables for the recent financial crises occurring during 2000-2020. The table depicts how specific economic variables are neglected each time in the run up to a financial crisis.

Table 1:
Perceived Certainty Variables for financial crises during 2000-2020.

Year	Crisis	Variable overlooked	What do they measure
2000s	Recession (Tech Bubble)	PE ratio	Ratio of share price to the earnings per share to estimate value.
2001	Turkish economic crisis	Budget Deficit	When expenses exceed revenue to indicate the financial health of a country.
2002	Uruguay banking crisis	Banking Regulation	A form of government regulation which subjects banks to certain requirements designed to create market transparency.
2007-09	World Financial Crisis	Leverage Ratio	The proportion of debts compared to equity/capital of a bank or firm.
2008-10	Auto crisis of US	Fuel Price	-
2008-12	Icelandic financial crisis	Foreign Debt	Total debt which the residents of a country owe to foreign creditors
2008-10	Irish banking crisis	External Debt	Portion of a country's debt borrowed from foreign commercial banks, governments, or international financial institutions.

2008	Latvian financial crisis	Interest Rate	The rate that lenders demand for the ability to borrow their money.
2009-10	Venezuelan banking crisis	Corruption	Misallocation of bank funds towards anonymous individuals
2008-16	Spanish financial crisis	Real Estate Prices	-
2009-19	European sovereign debt crisis	Debt to GDP ratio	A ratio indicating if an economy that produces and sells has sufficient funds to pay back debts without incurring further debt.
2014-17	Brazilian economic crisis	Share of External Demand	The extent to which entities create demand for export commodities.
2015	China stock market crash	Financial Regulation	-

Conclusion

This paper argues that it is these pre-crisis times of uncertainty during which investors feel confident towards the direction of movement of a deterministic economic variable. This ‘Perceived Certainty’ propelled investment into highly inefficient dot com companies in the 2000s, into subprime mortgages in 2008, and into lending to bad credit countries in the Eurozone in 2009.

Contrary to classic causation of uncertainty and financial crashes, this paper argues that it is the ‘Perceived Certainty’ during the crucial time of buildup of a crisis that actually leads to the buildup of the crisis. Economic actors behave as though there is total certainty regarding key economic variables. This belief manifests in two primary outcomes: neglect of a key economic variable; disregard of the effectiveness of a key economic variable as a measure of the health of the economy.

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References

Federal Funds Rate - 62 Year Historical Chart. Macrotrends.net. Accessed on 6th March 2022 from <https://www.macrotrends.net/2015/fed-funds-rate-historical-chart>.

Kenneth R. Gray, Larry A. Frieder & George W. Clark Jr. (2007) Financial Bubbles and Business Scandals in History, *International Journal of Public Administration*, 30:8-9, 859-888, DOI: 10.1080/01900690701227420

Kline G. (20 April 2003). Mosaic started Web rush, Internet boom. The news-gazette. <http://www.news-gazette.com/news/local/2003-04-20/mosaic-started-web-rush-internet-boom.html>.

Maddaloni, A., & Peydró, J.-L. (2011). Bank Risk-taking, Securitization, Supervision, and Low Interest Rates: Evidence from the Euro-area and the U.S. Lending Standards. *The Review of Financial Studies*, 24(6), 2121–2165. <http://www.jstor.org/stable/20869300>

McCullough B. (4 Dec. 2018). A look at the 2000 dot-com bubble and how it shapes our lives. Ideas.ted.com. <https://ideas.ted.com/an-eye-opening-look-at-the-dot-com-bubble-of-2000-and-how-it-shapes-our-lives-today/>.

Mishkin F.S. and Eakins S.G. (2011). Financial Markets and Institutions, Pearson Education, 6 th Edition. [http://www.kadamaee.ir/payesh/books-tank/19/Mishkin%20&%20Eakins%20-%20Financial%20Markets%20and%20Institutions,%207e%20\(2012\).pdf](http://www.kadamaee.ir/payesh/books-tank/19/Mishkin%20&%20Eakins%20-%20Financial%20Markets%20and%20Institutions,%207e%20(2012).pdf).

Palombo, Edoardo. (2019). Unconventional Monetary Policy, Leverage & Default Dynamics. 10.13140/RG.2.2.26043.57126.

P. C. Wason (1960) On the failure to eliminate hypotheses in a conceptual task, *Quarterly Journal of Experimental Psychology*, 12:3, 129-140, DOI: 10.1080/17470216008416717.

Plous, S. (1993). The psychology of judgment and decision making. New York: McGraw-Hill.

Pop Goes the Nasdaq (March 10, 2000). WIRED. <https://www.wired.com/2010/03/0310nasdaq-bust/>

Samuelson R. J. (28 April 2009). Sunrise – or False Dawn? The Washington post. <https://www.washingtonpost.com/archive/opinions/1999/04/28/sunrise-or-false-dawn/e816d5ba-5660-43bd-a4b8-4ab38526cb6d/>

Shiller, Robert J. (2000). Irrational Exuberance. Princeton University Press.

Stiglitz, J. E., & Weiss, A. (1981). Credit Rationing in Markets with Imperfect Information. *The American Economic Review*, 71(3), 393–410. <http://www.jstor.org/stable/1802787>

Weinberger M. (Feb 4, 2016). If you're too young to remember the insanity of the dot-com bubble. *Business Insider Australia*.
<https://www.businessinsider.com.au/history-of-the-dot-com-bubble-in-photos-2016-2>.

Wollscheid C. (2012), *Rise and Burst of the Dotcom Bubble*, Munich, GRIN Verlag,.
<https://www.grin.com/document/197166>.