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Animal Spirits in the 21st Century: The Role of Global Asset Bubbles in the Current Financial Crisis

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In the midst of the Great Depression, John Maynard Keynes wrote that many decisions where the full effects will not be known for some time “can only be taken as the result of animal spirits,” which Keynes defined as “a spontaneous urge to action rather than inaction, and not as the outcome of a weighted average of quantitative benefits multiplied by quantitative probabilities.”[1] Historically, as well as in our present age, one possible manifestation of this type of behavior might very well be the phenomenon which has become known, metaphorically, as a “bubble.” What role, if any, has the presence of asset market bubbles played in the current cycle of global financial turbulence? If the determination is made that developments of this type has made their presence known in these times, then what kind of insights from Christian reflection might be brought to bear on the discussion over possible institutional, regulatory, and educational responses that would be intended to reduce the likelihood of a repeat performance in the future?

The opinion of economists with respect to the precise definition of a bubble remains divided. Nobel Laureate Joseph Stiglitz has maintained that such an event exists when the price of a asset rises “*only* (emphasis in the original) because investors believe that the selling price will be high tomorrow.”[2] This definition implies that changes in the price of these assets are unrelated to what Peter Garber has referred to as “fundamentals,” which “are a collection of variables that we believe should drive asset prices.”[3] The debate over the existence of asset bubbles is closely related to the question of whether or

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[1] John Maynard Keynes, The General Theory of Employment, Interest, and Money. New York: Harcourt, Brace, and Co., 1936, p. 161.
[2] Joseph E. Stiglitz, “Symposium on Bubbles.” Journal of Economic Perspectives, vol. 4, no. 2 (Spring, 1990): 13.
[3] Peter Garber, Famous First Bubbles: The Fundamentals of Early Manias. Cambridge, MA: MIT Press, 2000, p. 4.

not contemporary economists still adhere to the assumption that Nobel Laureate Herbert Simon characterized as the "classical theory of omniscient rationality."[4] If human decision-makers truly possess such qualities, then there should be, by definition, no changes in asset prices which cannot be explained in terms of underlying fundamentals. From the standpoint of Christian theology, the omniscient half of such an outlook, if it is meant literally, is inherently problematic, because Christians believe that only God possesses perfect knowledge and that human beings are always making decisions in the presence of some degree of ignorance.[5] With respect to rationality, Stephen LeRoy has written that the meaning of this term "in economic discussion appears to have changed in recent years" to one that views rationality as "a conceptual tool used in formulating economic models," as opposed to "a substantive hypothesis about the world." [6] For example, Matthias Klaes and Esther Mirjam-Sent have concluded that Simon was probably the first economist or social scientist to have employed the phrase "bounded rationality" in order to refer to a more limited set of assumptions about human capabilities.[7] Simon defined this concept as consisting of "rational choice that takes into account the cognitive limitations of the decision-maker – limitations of both knowledge and computational capability."[8] According to Thomas Sargent, this approach, compared with other definitions of rational behavior, no longer assumes that decision-makers

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[4] Herbert A. Simon, "Rational Decision-Making in Business Organizations." American Economic Review, vol. 69, no. 4 (September 1979): 496.

[5] On a related issue, Philip Booth has argued that Christian thought and Austrian economic theory share a common belief that "the accumulated knowledge of previous generations is an important complement to the absence of perfect knowledge within any given generation." "Christianity, the Market Economy, and the Limits to Human Knowledge." Economic Affairs, vol. 25, no. 2 (June 2005): 45.

[6] Stephen F. LeRoy, "Rational Exuberance." Journal of Economic Literature, vol. 42, no. 3 (September 2004): 794.

[7] Matthias Klaes and Esther Mirjam-Sent, "A Conceptual History of the Emergence of Bounded Rationality." History of Political Economy, vol. 37, no. 1 (2005): 37.

[8] Herbert A. Simon, "Bounded Rationality." John Eatwell, Murray Milgate, and Peter Newman (eds.), The New Palgrave: A Dictionary of Economics, vol. 1. London: Macmillan, 1987, p. 267.

maintain consistent perceptions, but instead update the rules by which they make choices as new information becomes available.[9] Even though these revised notions of human rationality have become generally accepted elements of the neoclassical economic paradigm, there is still a tendency to characterize asset bubbles as a manifestation of irrational behavior that cannot exist, by definition, within the formal models that are utilized in order to explain market behavior. Given the recent turbulence in global financial markets, and the current experience of an international economic downturn, it seems highly unlikely that large numbers of people would intentionally make decisions that would lead to such outcomes if they had known in advance, or even had a rough idea, that this would be the case. As LeRoy has observed, "It is a testament to economists' capacity for abstraction that they have accepted without question that an intricate theoretical argument against bubbles has somehow migrated from the pages of *Econometrica* to the floor of the New York Stock Exchange."[10]

In his well-known book on the history of financial crises, Charles Kindleberger wrote that while "there can be no doubt that rationality in markets in the long run is a useful hypothesis . . . the pages of history are strewn with language, admittedly imprecise and possibly hyperbolic, that allows no other interpretation than occasional irrational markets and destabilizing speculation."[11] Kindleberger went on to identify six distinct, but related, causes for these kind of developments, which he described as "manias" and "panics":

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[9] Thomas J. Sargent, Bounded Rationality in Macroeconomics. New York: Oxford University Press, 1993, p. 34.
[10] LeRoy, p. 801.
[11] Charles P. Kindleberger, Manias, Panics, and Crashes: A History of Financial Crises. New York: John Wiley & Sons, Inc., 1996, pp. 21-22.

1) Mob psychology;
2) Changes in behavior at different stages of a continuing process, where people start out acting rationally, but then become increasingly irrational with the passage of time;
3) Differences in rationality among different groups of traders, investors, or speculators;
4) The fallacy of composition;
5) The failure of a market with rational expectations with respect to the *quality* of a reaction to a given stimulus to estimate the right *quantity* (emphases in the original);
6) Economic actors may choose the wrong model, fail to take account of a particular type of information, or suppress information that does not conform to the model which has been adopted.[12]

How might we apply a historical understanding of previous financial crises to the process of constructing an explanatory framework for our current situation? In one of the appendices to his previously cited volume, Kindleberger categorized 35 separate financial crises, dating from the early 17th century to the last decade of the 20th century, on the basis of the following criteria:

1) The affected countries;
2) The significant economic and political events that were taking place concurrently;
3) The object of preceding speculative activity;
4) The source of any preceding monetary expansion;

[12] Ibid., p. 23.

5) The point in time where speculative activity reached its peak;

6) The point in time at which the mania reaches the crisis stage;

7) The relevant lenders of last resort.[13]

In the context of our current difficulties, it would probably be easier to construct a list of the unaffected countries around the globe. In recent months, financial markets on every continent have experienced significant decreases in asset prices.[14] Particular nations, most notably the United States and the United Kingdom, have also undergone a major decline in housing prices.[15] Several political and economic events, which took place at the end of the last decade and the beginning of this one, each made a contribution to the process that has led us to our current predicament. The end of the "dot.com" bubble in technology and Internet-related financial assets, as well as the scandals surrounding companies such as Enron and Arthur Anderson, fostered a reluctance to invest in stocks and a search for alternative avenues for profitable investment. As has been the case in our present time, these developments in the financial sector made their presence felt in the real economy, as the United States experienced a recession from March to November of 2001.[16] The Federal Reserve responded to this situation by implementing an expansionary monetary policy, lowering the intended Federal funds rate 11 times in 2001 alone.[17] The decline in market interest rates which followed the Federal

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[13] Ibid., pp. 203-212.
[14] In its year-end review of markets and finance, the Wall Street Journal reported that the Dow Jones World Index, measured in U.S. dollars, fell by 42.9% in 2008 when the United States was included, and by 46% when the United States was excluded. Joanna Slater, "Global Markets Are in for Another Tough Slog." The Wall Street Journal, January 2, 2009, p. R4. This trend continued into the first two months of 2009.
[15] The Economist stated, in a special report last autumn on the world economy, that "on a quarterly basis prices are now falling in at least half the 20 countries" in its index of housing prices." Zanny Minton Beddoes, "When fortune frowned." The Economist, October 11, 2008, p. 4.
[16] The National Bureau of Economic Research. "Business Cycle Expansions and Contractions." http://wwwdev.nber.org/cycles/cyclesmain.html Accessed 13 January 2009.

Reserve's actions served to encourage investment in the housing sector. The appeal of housing as an asset choice may also have been reinforced by a shift in the public mood, following the terrorist attacks of September 11, 2001, in the direction of an intensified preference for safety and security. Whether or not bricks and mortar was a less risky investment choice than stocks, bonds, or other financial assets, it was literally and figuratively "closer to home," and less likely to be the subject of any future acts of terrorism. While one might debate the relative weight that should be attached to these various factors, the results seem reasonably clear in retrospect: an increase in the market price of housing and related assets as a result of the higher level of demand. This increase in spending was facilitated by financial institutions, who lowered their lending standards, particularly in the area of what have become known as "subprime" mortgages, which were extended to borrowers with lower credit ratings.[18] Although much of this activity took place within an American context, the effects were transmitted globally as many of these mortgages were packaged into complex securities that were purchased by investors around the world. As the American and global economies continued to expand in the middle portion of this decade, the Federal Reserve changed the content of its monetary policy, raising the intended Federal funds rate on 17 separate occasions, each time in 25-basis point increments, over a two-year period from 2004 to 2006.[19] This change in direction, however, was not sufficient to allow the housing market to deflate in a gradual manner. As the economy of the United States began, in 2007, to move towards

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[17] The Board of Governors of the Federal Reserve System. "The Federal Reserve Board: Open Market Operations." http://www.federalreserve.gov/fomc/fundsrate.htm/ Accessed 13 January 2009.
[18] William C. Wood has defined subprime lending as the extension of a loan to a borrower with a credit rating below 620, on a standard scale of 300 to 850. "Subprime Lending and Social Justice: A Biblical Perspective." Journal of Markets and Morality, vol. 11, no. 2 (Fall, 2008): 196.
[19] "The Federal Reserve Board: Open Market Operations." Accessed 29 January 2009.

the beginning of the current recession in December of that year,[20] increasing numbers of homeowners began experiencing difficulty in making the payments on their mortgages. As time passed, this situation began to threaten the financial stability of those institutions who had extended these loans, as well as those who had purchased securities that were linked to these instruments. The Federal Reserve began to respond to these developments in September of 2007 by lowering the intended Federal funds rate, a practice that it has repeated nine times since then in the hope of cushioning the effect of these events on the real economy. [21] Other central banks around the world have implemented similar policies which are designed to provide liquidity to the world financial system. [22] While these measures may be judged, with the passage of time, to have been useful in containing the damage, they were unable to prevent the global financial crisis that peaked in October of 2008, and which has now turned into the most significant downturn in the global economy since the end of the Second World War. Olivier Blanchard, chief economist at the International Monetary Fund, has summarized this chain of events as follows:

> "In the context of rapid global integration and deep and complex interconnections between financial institutions, the crisis quickly moved across assets, markets, and economies. The rest is history, or, more precisely, history in the making."[23]

Part of the "history in the making" to which Blanchard refers is the beginning of what is reasonably certain to be a long process of debate over the assignment of responsibility for the chain of events that has brought us to this point in international

[20] "Business Cycle Expansions and Contractions." Accessed 3 February 2009.
[21] "The Federal Reserve Board: Open Market Operations." Accessed 3 February 2009.
[22] The Wall Street Journal recently reported that four major central banks – the Bank of England, the Bank of Canada, the European Central Bank, and the Reserve Bank of Australia – were expected to reduce their benchmark interest rates to levels similar to those which have been already set by the Federal Reserve. Joanna Slater, "Dollar Gains Favor As Zero Rates Go Global." The Wall Street Journal, March 3, 2009, p. C1.
[23] Olivier Blanchard, "Cracks in the System: Repairing the damaged global economy." Finance and Development, vol. 45, no. 4 (December 2008): 8.

economic history. John Taylor, for one, has put forth the case for policy and regulatory failure as a major causal explanation, arguing that "monetary excesses were the main cause of the (housing) boom," and that agencies such as Fannie Mae and Freddie Mac "were encouraged to expand and buy mortgage-backed securities, including those formed with the risky subprime mortgages."[24] Robert Shiller, by contrast, has maintained, employing Keynes' metaphor of animal spirits, that the recent and current state of our financial markets is a matter of trust; excessively high during the period when what Shiller refers to as "complicated strategies of securitization" were being developed, and excessively low in the aftermath of the "wreckage of formerly towering financial institutions."[25] Not surprisingly, their alternative "diagnoses" of the causes of our economic "illness" lead these two economists to purpose different "remedies." Professor Taylor maintains that "early on, policy makers misdiagnosed the crisis as one of liquidity, and prescribed the wrong treatment."[26] He criticizes the creation of the Term Auction Facility, the passage of the Economic Stimulus Act of 2008, and the Federal Reserve's reductions in the target Federal funds rate in late 2007 and early 2008.[27] Professor Shiller, as it turns out, contends that the various interventions by the U.S. Treasury and the Federal Reserve "so far have been in the right direction," and his primary critique of the Obama Administration's fiscal initiatives is that they should be more extensive in

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[24] John B. Taylor, "How Government Created the Financial Crisis." The Wall Street Journal, February 9, 2009, p. A19.

[25] Robert J. Shiller, "Animal Spirits Depend on Trust." The Wall Street Journal, January 27, 2009, p. A15. A similar observation was previously made by James Grant: "If the confidence deficit seems so high, it's because the preceding confidence surplus was full to overflowing. People suspended critical judgment. They accepted at face value the pretensions of central bankers and the competence of central bankers. Not one professional investor in 50, probably, doubted that wads of subprime mortgages could be refashioned into bonds that were just as creditworthy as U.S. Treasurys." "The Confidence Game." The Wall Street Journal, October 18-19, 2008, p. W1.

[26] Taylor, ibid.

[27] Ibid.

order to have a greater effect on public confidence.[28] While it should be noted that these two perspectives are not mutually exclusive, at least in terms of their respective views on the origins of the crisis, it also bears mentioning that the discussion has expanded in recent months to include an examination of what might be regarded as more foundational issues with respect to the role of finance in a market economy, or even the market system itself. In a column published just before Christmas last year, Christopher Caldwell opined that "the public has no settled idea about whether the global finance system seized up last summer because it was mismanaged or because it was, in a moral and metaphysical sense, wrong."[29] Some Christian commentators have been quick to agree with the observations offered by the Archbishop of Canterbury, Rowan Williams, that "the credit crunch should be seen as a welcome 'reality check' to a climate of 'unsustainable greed.'"[30] In fact, one almost detects a note of glee in some Christian reflections on recent events and our current state of affairs, viewing the collapse of asset bubbles and the resulting financial instability as a manifestation of Divine Judgment on our individual and collective economic sins. Left-leaning observers have used the crisis as a platform to question the moral standing of financial markets and globalization,[31] while some on the Right have emphasized the lack of personal responsibility associated

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[28] Shiller, ibid.

[29] Christopher Caldwell, "Time for some morality trades." Financial Times, December 19, 2008. http://www.ft.com/ Accessed 20 December 2008.

[30] Joe Parkinson, "Church Sees Lesson in Crisis." The Wall Street Journal, December 19, 2008, p. C5. Gordon Brown, the Prime Minister of the United Kingdom, responded to the Archbishop's comments with a Biblical reference of his own. Drawing upon the parable of the Good Samaritan, he said that "I think the Archbishop will agree with me that every time someone becomes unemployed or loses their home or a small business fails it is our duty to act and we should not walk by on the other side when people are facing problems." Philippe Naughton, "Brown slaps down Archbishop of Canterbury in credit crunch row." Times Online. December 18,2008. http://www.timesonline.co.uk/ Accessed 19 December 2008.

[31] In a published interview last autumn, Edward Hadas characterized the conclusion that the financial crisis discredits the entire market system as "a cause looking for an opportunity." "Is Capitalism Morally Bankrupt?" Standpoint Online, November, 2008. http://www.standpointmag.co.uk/print/573/ Accessed 29 December 2008.

with a culture of over-consumption and high levels of debt. Philip Booth has cautioned believers against such a rush to judgment, arguing that "many factors have created the perfect storm."[32] In addition to errors of judgment in monetary policy, Booth lists regulatory mistakes, an absence of prudence and caution by financial market participants, a low level of saving and excessive borrowing by households, and the market transitions which "have diminished the value of relationships in financial services and replaced a culture of trust with one of compliance."[33] In some respects, it would be simpler if the origins of the crisis could be limited to problems that are easily remedied, in a relative sense, by changes in monetary policy and the regulatory framework which governs financial markets. Policymakers can take actions which are designed to restrict the supply of money and credit in an attempt to maintain interest rates at a certain level, and supervisory agencies can tighten the rules which govern borrowing, lending, and the purchase of various assets. In spite of the merits that might be associated with these measures, none of them can ensure that asset bubbles will not make their presence known again at some point in the future, just as they have in the past.

For the purpose of argument, let us suppose that people around the world, in the aftermath of recent events, acquire the new perspective on economics and finance – a more altruistic and less selfish outlook – that Archbishop Williams identified as a sign of repentance.[34] Christian economists would certainly rejoice if global markets came to be characterized by a higher degree of trust and a lower level of greed.[35] Such a turn of

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[32] Philip Booth, "Bishops should tread carefully in their response to the financial crisis. Institute of Economic Affairs, 4 November 2008. http://www.iea.org.uk/record.jsp?type=pressArticle&ID=378/ Accessed 7 November 2008.
[33] Ibid.
[34] Naughton, ibid.
[35] Philip Booth has advised caution in this area, saying that "greed was probably not the main failing" in financial markets, and that "this is just as well because it is difficult to eradicate!" Booth, ibid.

events, however desirable, would not change the fact that all of us, to paraphrase the Apostle Paul, "see through a glass darkly," and make decisions in a state of partial ignorance, compounded by the reality that some of the information that we do possess may not be accurate or complete.[36] James Grant maintains that one of the reasons why investors were so eager to purchase mortgage-backed securities during the run-up to our present circumstances – "at interest rates only a few tenths of a percentage point higher than Treasury-bill yields" - is that they were assigned a triple-A rating at the time.[37] With respect to these evaluations of risk, Charles Goodhart has concluded that "prior to August 2007, there was some general satisfaction among the monetary authorities that the undesirable and excessive under-pricing of risk" which had taken place previously "was in the process of being reversed."[38] All of this seems quite consistent with one of Charles Kindleberger's historical catalysts for the emergence of financial crises over the centuries: metaphorical sins of commission (the choice of an inaccurate model or the suppression of information that does not conform to that model) or omission (failure to account for a particular type of information.) It also mirrors the judgment by Martin Wolf that "the benefit and risk of finance are two sides of one coin . . . The risk is that the resulting pyramids of promises are vulnerable to fraud, deception, and irreducible uncertainty and so to successive fits of optimism and panic.[39]

The debate over the causes of the global financial crisis and recession, including the role of global asset bubbles in this process, will no doubt continue for years to come;

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[36] In his article on the points of tangency between Christian thought and Austrian economics, Philip Booth states that "perhaps the most important commonality" between the two "is that they both stress the limits to 'pretending that we know more than we do.'" Booth, op. cit., p. 45.

[37] Grant, p. W3.

[38] C. A. E. Goodhart, "The background to the 2007 financial crisis." International Economics and Economic Policy, vol. 4, no. 4 (February 2008): 331.

[39] Martin Wolf, "Risks and rewards of today's unshackled global finance." Financial Times, 27 June 2007, p. 11.

in the words of Charles Goodhart, "it may take quite a long time before a comprehensive history of this crisis can be written."[40] Goodhart also points out that all of us who are trying to understand and explain these events bring our personal views to the discussion, in a manner that is similar to the story of the group of blind men who each feel different parts of an elephant.[41] In that spirit, this paper would agree with the assertion that policy and regulatory errors tell part of the story, but as Prime Minister Jan Peter Balkenende of the Netherlands recently pointed out in a public statement preceding the recently concluded G20 summit in London, rules and oversight will never be "watertight," especially at the global level.[42] Fallen human beings are also prone to the sin of greed, but this is not a new phenomenon, and it is quite unlikely to disappear on this side of the full realization of the Kingdom of God. Another manifestation of human imperfection, which is more correctable in nature, is the observation that we make decisions in the presence of imperfect information and inaccurate interpretation of the information that we do possess, as well as the fluctuations in our "animal spirits." Therefore, perhaps the greatest contribution that Christian economists can make in these times is to point the way towards a more humble and prudential direction for the future of the financial sector, so that the consequences of our mistakes might be less severe, in a manner that is analogous to reducing one's rate of speed when driving in inclement weather. No one should pretend that this will be an easy task, particularly in a global economic environment that, despite the recent resurgence of economic nationalism in response to our present difficulties, is likely to remain highly integrated. As British Prime Minister

[40] Goodhart, ibid.
[41] Ibid.
[42] Government of the Netherlands. "Statement of Prime Minister Balkenende regarding the G20." Video presentation. http://www.government.nl/News/Press_releases_and_news_items/ Accessed 1 April 2009.

Gordon Brown recently noted at St. Paul's Cathedral in London, in remarks that were delivered in advance of the G20 summit, the same process of globalization that has "lifted millions out of poverty has also unleashed forces that have totally overwhelmed the old national rules and the systems of financial oversight."[43] In conclusion, Max Stackhouse offers the following words of encouragement in the direction of this ongoing mission:

> "(The system of modern banking institutions) was built on efforts to form shared interests with a covenanted sense of being responsible trustees of other people's money and trustworthy stewards of institutions. These institutions would in turn be able to generate wealth for the commonwealth under the watchful eye of a just God. Joint multinational intervention and civil societal reformation now must reconstruct a foundational ethic like this for our globalizing era."[44]

[43] The Office of the Prime Minister. "Speech and Q&A at St. Paul's Cathedral." 31 March 2009. http://www.number10.gov.uk/Page18858/ Accessed 2 April 2009.

[44] Max Stackhouse, "Why Theology in International Affairs?" The Review of Faith & International Affairs, vol. 7, no. 1 (Spring 2009): 76.

Reference List

Beddoes, Zanny Minton. "When fortune frowned." The Economist: A special report on the global economy. October 11, 2008.

Blanchard, Olivier. "Cracks in the System: Repairing the damaged global economy." Finance and Development, vol. 45, no. 4 (December 2008): 8-10.

Board of Governors of the Federal Reserve System. "The Federal Reserve Board: Open Market Operations." http://www.federalreserve.gov/fomc/fundsrate.htm/

Booth, Philip. "Christianity, the Market Economy, and the Limits to Human Knowledge." Economic Affairs, vol. 25, no. 2 (June 2005): 44-45.

________. "Bishops should tread carefully in their response to the financial crisis." Institute of Economic Affairs, 4 November 2008. http://www.iea.org.uk/

Caldwell, Christopher. "Time for some morality trades." Financial Times, December 19, 2008. http://www.ft.com/

Eatwell, John, Milgate, Murray, and Newman, Peter (Eds.). The New Palgrave: A Dictionary of Economics, vol. 1. London: Macmillan, 1987.

Garber, Peter. Famous First Bubbles: The Fundamentals of Early Manias. Cambridge, MA: MIT Press, 2000.

Goodhart, C. A. E. "The background to the 2007 financial crisis." International Economics and Economic Policy, vol. 4, no. 4 (February 2008): 331-346.

Government of the Netherlands. "Statement of Prime Minister Balkenende regarding regarding the G20." Video presentation. http://www.government.nl/

Grant, James. "The Confidence Game." The Wall Street Journal, October 18-19, 2008, pp. W1, W3.

"Is Capitalism Morally Bankrupt?" Standpoint Online, November, 2008. http://www.standpointmag.co.uk/

Keynes, John Maynard. The General Theory of Employment, Interest, and Money. New York: Harcourt, Brace, and Co., 1936.

Kindleberger, Charles P. Manias, Panics, and Crashes: A History of Financial Crises. New York: John Wiley & Sons, Inc., 1996.

Klaes, Matthias, and Mirjam-Sent, Esther. "A Conceptual History of the Emergence of Bounded Rationality." History of Political Economy, vol. 37, no. 1 (2005): 27-59.

LeRoy, Stephen F. "Rational Exuberance." Journal of Economic Literature, vol. 42, no. 3 (September 2004): 783-804.

National Bureau of Economic Research. "Business Cycle Expansions and Contractions." http://www.nber.org/cycles/cyclesmain.html/

Naughton, Philippe. "Brown slaps down Archbishop of Canterbury in credit crunch row." Times Online. December 18, 2008. http://www.timesonline.co.uk/

Office of the Prime Minister. "Speech and Q&A at St. Paul's Cathedral." 31 March 2009. http://www.number10.gov.uk/

Parkinson, Joe. "Church Sees Lesson in Crisis." The Wall Street Journal, December 19, 2008, p. C5.

Sargent, Thomas J. Bounded Rationality in Macroeconomics. New York: Oxford University Press, 1993.

Shiller, Robert J. "Animal Spirits Depend on Trust." The Wall Street Journal, January 27, 2009, p. A15.

Simon, Herbert A. "Rational Decision-Making in Business Organizations." American Economic Review, vol. 69, no. 4 (September 1979): 493-513.

Slater, Joanna. "Global Markets Are in for Another Tough Slog." The Wall Street Journal, January 2, 2009, p. R4.

________. "Dollar Gains Favor as Zero Rates Go Global" The Wall Street Journal, March 3, 2009, p. C1.

Stackhouse, Max. "Why Theology in International Affairs?" The Review of Faith & International Affairs, vol. 7, no. 1 (Spring 2009): 73-76.

Stiglitz, Joseph E. "Symposium on Bubbles." Journal of Economic Perspectives, vol. 4, no. 2 (Spring 1990): 13-18.

Taylor, John B. "How Government Created the Financial Crisis." The Wall Street Journal, February 9, 2009, p. A19.

Wolf, Martin. "Risks and rewards of today's unshackled global finance." Financial Times, June 27, 2007, p. 11.

Wood, William C. “Subprime Lending and Social Justice: A Biblical Perspective. Journal of Markets and Morality, vol. 11, no. 2 (Fall 2008): 189-203.