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### **The Economics of Instability: An Abstract of an Excerpt\***

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## **ABSTRACT**

The dominant postwar tradition in economics assumes the utility maximization of economic agents drives markets toward stable equilibrium positions. In such a world there should be no endogenous asset bubbles and untenable levels of private indebtedness. But there are.

There is a competing alternative view that assumes an endogenous behavioral propensity for markets to embark on disequilibrium paths. Sometimes these departures are dangerously far reaching. Three great interwar economists set out most of the economic theory that explains this natural tendency for markets to propagate financial fragility: Joseph Schumpeter, Irving Fisher, and John Maynard Keynes. In the postwar period, Hyman Minsky carried this tradition forward. Early on he set out a “financial instability hypothesis” based on the thinking of these three predecessors. Later on, he introduced two additional dynamic processes that intensify financial market disequilibria: principal–agent distortions and mounting moral hazard. The emergence of a behavioral finance literature has provided empirical support to the theory of endogenous financial instability. Work by Vernon Smith explains further how disequilibrium paths go to asset bubble extremes.

The following paper provides a compressed account of this tradition of endogenous financial market instability.

**KEYWORDS:** Financial Instability; Joseph Schumpeter; Irving Fisher; John Maynard Keynes; Hyman Minsky; Financial Markets; Macroeconomics

**JEL CLASSIFICATIONS:** D53; E44

The US stock market is now the second-most overvalued market in our history. The ratio of private indebtedness to GDP has now soared to a new all-time high (beyond 2007), and the same thing has happened in most of the major economies in the world. History tells us that when these two extremes of asset overvaluation and private debt excess have been approached in the past at the same time there has been a financial crisis.

To understand how finance in the US economy has reached what can now be considered a pathological state one needs theory that explains how financial markets go “off the rails.” Today’s orthodox economic and financial theories deny that unfettered financial markets will embark on such perilous disequilibrium paths despite the obvious fact they do so and have been doing so in recent decades more frequently and to greater extremes, both in the United States and around the world.

There is a tradition in economic theory set out by three great economists in the prewar period (Schumpeter, Fisher, and Keynes) that explains why free, unfettered financial markets do not tend to converge to stable equilibria but tend to fly off into asset price overshooting and extremes of private indebtedness, sometimes to the point of systemic financial fragility.

In the postwar period this tradition has been eclipsed by what is usually referred to as neoclassical general equilibrium economics, of which efficient market theory is a corollary. During the postwar decades Hyman Minsky kept the prewar “heterodox” economics of financial instability alive and expanded on it in ways that encompassed new behaviors and institutions in finance that then emerged. His work is an economics of endogenous financial instability for our time.

There has also emerged a new “behavioral economics” that provides empirical support for such a body of disequilibrium finance theory. One small contribution by Vernon Smith (Gjerstad and Smith 2014) elaborates on the endogenous nature of financial market disequilibria that helps explain the infrequent extremes we call bubbles.

We treat this body of heterodox finance theory as a toolkit to explain how asset market overshooting and private debt deepening to the point of systemic insolvency has “picked up steam” in the postwar global economy during the last several decades. Our toolkit explains how endogenous instability has become more multifaceted in our time, why simple historical comparisons are misleading, and why another Great Financial Crisis lies ahead.

## **THE ECONOMICS OF BUBBLES AND QUASI BUBBLES**

Where we came from was a place with considerable cyclical instability in the economy, periodic banking crises that turned recessions into depressions, and gyrations in the price level from bouts of inflation to follow-on episodes of price deflation. During this period, which runs up to World War II, there were big bull markets in stocks that accompanied economic booms. There were accompanying expansions in credit that sometimes became dangerously speculative, thereby setting up the economy for a downdraft of price deflation and depression. But there were very few outright asset bubbles. And when indebtedness rose in booms it was usually short-circuited by the very frequent recessions and depressions of the time. In fact, high levels of indebtedness tended to be reached at the bottom of depressions, not the peak of booms, as price deflations caused nominal incomes to fall far more rapidly than the legacy of contractual debt.

The history of economics is divided into two schools. One assumes that the behavior of economic agents is such that, in trying to maximize their own self-interests, they drive markets toward stable equilibrium positions, which are also “welfare” optimums for society at large. This long tradition begins with Adam Smith and his invisible hand. It goes on to Leon Walras and his theory of general equilibrium. It then proceeds to dominance in the postwar era in a long succession of highly mathematized general equilibrium models. The basic thesis shared by this tradition in our intellectual history is that free, unfettered markets left to their own devices will produce stable outcomes. In such a world there can be no market forces that might lead to endogenous asset bubbles and excessive and untenable levels of private indebtedness.

There is a competing alternative view of the economic world as well. It not only assumes there are no lasting stable equilibrium positions in a free, unfettered market economy; the behavior of economic agents is such that there is always an endogenous propensity for markets and economies to depart from equilibrium positions and embark on disequilibrium paths. Sometimes these departures are long and far reaching.

Three great economists in the prewar period focused on this natural tendency of economies to “go off the rails.”

- Joseph Schumpeter tells us that in the industrial era there emerged waves of innovation so great as to transform the entire economy. Innovation is not invention. It is a new combination of new inventions and the already existing here and now. It profoundly transforms goods and services, their means of production, and the opening of attendant new markets. The entrepreneur is the modern “captain of industry.” Driven by fierce creative energies beyond the “motivation of the hedonist kind” (Schumpeter 1934), the entrepreneur envisions the project that transforms and against all odds carries it out. The entrepreneur is not a capitalist; he does not have the capitalist’s accumulated wealth. He must raise the funds from others to implement his grand project. For Schumpeter “financing as a special act” is critical. It does not come from penny-pinching thrift but from the debt-providing commercial banker and the investment banker who mobilizes funds through the issuance of bonds and stocks.
- For the entrepreneurs who drive such transformative innovations forward there are the high profits of transitory monopolies. Great improvements in productivity and profits lead to great booms in business investment. Investors among the public, seeing all of the new-found riches, develop unrealistic extrapolative euphoric expectations of returns they can share in. The entrepreneur fans the flames of such emotions in order to bring his grand project to completion. There is overshooting of asset prices. Money floods into the new, new thing. Debts rise beyond the capacity to service them. In the end swarming competitors finance blind, stupid, duplicative investments. Overcapacity, falling profits, abandoned investments, debt payment failures, price deflation, and economic depression

then follow. Such transformative innovations that lift economic activity and its attendant psychology far away from a moving growth equilibrium cause recurring medium- and long-wave Juglar and Kondratieff business cycles.

- Irving Fisher shares Joseph Schumpeter's vision of endogenous instability. Such transformative innovations that lead to euphoric expectations on the part of businesses also draw more and more of the public into corporate stocks. Irving Fisher sees in the trading of those stocks new sources of instability that intensify the Schumpeterian waves. There is a tendency for businesses to imprudently finance with debt, for optimistic households to finance purchases of homes and durables with debt, and for investors to leverage up their stock portfolios with debt. The financial side of the boom goes to excesses, beyond those described by Schumpeter. In time they culminate in a great excess which Fisher calls "the debt disease" (Fisher 1933). The fee-seeking agents of the financial markets—the brokers, the investment bankers, and the most powerful speculators—fan the flames of leveraged speculation among the public, adding to the dangerous excessive debt of the boom. Once the debt disease becomes fatally virulent, liquidation and price deflation cause the downside feedback loop of debt deflation depressions.
- Lord Keynes (1936) does not focus on Schumpeterian transformative innovations and the business-cycle excesses they foster, nor does he focus on the propensity of firms and investors among the public to borrow imprudently as the boom progresses. As a seasoned, hugely successful stock market speculator Keynes focuses instead on an inherent tendency for investors in liquid stock markets to become herding short-term traders who move the equity market away from any possible equilibrium position.

For Keynes the future is so uncertain that the denizens of the stock market must embrace somewhat arbitrary conventions that the future will be much like some aspect of the present and recent past and proceed accordingly. The problem is that in an uncertain world there is more than one plausible such "conventional" basis of valuation, and investors from time to time jettison one for another. These frequent revaluations of

shares create trading opportunities that dwarf the slow pace of annual investment returns. Therefore investors become focused on anticipating and riding these changes in the convention, which can be sudden and violent. Then the market is subject to “waves of optimistic and pessimistic sentiment which are unreasoning” (Keynes 1936). So fundamental uncertainty clouds any stable equilibrium from the purview of the market participants, and gaming the other guy’s response to a morphing conventional basis of valuation leads to perpetual large-scale speculative over- and under-shooting of any possible equilibrium.

For Keynes there is yet more to the dynamics of this propensity for speculative overshooting that arises from the management of client (principal) portfolios by investment professionals (agents). Keynes (1936) says that money management based on genuine long-term returns is scarcely practicable. It is human nature that clients desire quick results, and only guessing how the crowd will behave can produce returns within the demanded time horizon. Also, the long-term investor who tries to see through the waves of optimism and pessimism that are unreasoning will come in for the most criticism whenever investment funds are managed by committees or boards or banks. They will be considered eccentric, unconventional, and rash in the eyes of average opinion. The fee-seeking economics of professional money management forces the investment professional to play casino games, usually at the expense of the long-term value of their client portfolios.

After World War II, the Walrasian general equilibrium school (Arrow 1983) came to dominate economics. Its basic postulate was that all economic agents are always rational in a very technical sense of the term. Economic agents live not just in the present but through time. They must try to optimize their utility intertemporally, which means they must be forward looking and strive to forecast future prices for all the goods and services that they might demand within some future budget constraint. Projecting the present and recent past forward will not suffice in a changing world; therefore adaptive or extrapolative expectations behavior cannot rule the roost. A new general equilibrium orthodoxy based on forward-looking rational expectations became an academic imperative; in this new scholasticism there was no way that economists

could “legally” talk about the backward-looking extrapolative expectations behavior that lies at the core of the theories of endogenous instability of Schumpeter, Fisher, and Keynes.

For the most part, there was little room for finance in postwar general equilibrium theory. But there emerged a “corollary” efficient market theory in the field of finance. It assumed rational expectations and an always reigning general equilibrium in financial markets in which all prices efficiently reflect all there is to know about future returns to all financial assets. There was no room for disequilibrium departures in financial markets from their set of efficient prices.

Amidst this academic banishment of the expectations postulates of the giants of the prewar era, Hyman Minsky (1970, 1978, 1986) sought to carry their flame forward in the postwar period. In the first 20 years of his professional writings he set out a financial instability hypothesis that was a muted and simplified account of the core theories of all of his three predecessors. There were no transformative innovations, there was no stock market with the leverage of margin debt, there was no casino gaming of investment professionals one against another. All Hy needed was a business cycle with the low cash flows of recessions and the high cash flows of booms, extrapolative expectations, and the fading of memory. When the good times rolled, businesses expected their high profits to persist forever forward. They invested too much and financed too much of it with debt. When the inevitable faltering of such boom-time cash flows arrived, the servicing of higher debt burdens could not be met. Businessmen and their bankers were forced to adjust. This involved the short-term Ponzi financing of cash flow shortfalls, the cessation of fixed investment, and the liquidation of assets and labor. Lending banks recoiled in revulsion; they chose to cease lending and sell assets. The result was a recession accompanied by financial crisis.

Charles Kindleberger (1978) was an economic historian who wrote in the 1970s the only postwar book on the subject of bubbles and debt excess, *Manias, Panics and Crashes*. Early in his book he described what he called a Minsky model of the propagation of such financial instabilities. His Minsky model had far more in it than what was to have been found in Minsky’s writings up to that time. Kindleberger knew his economic history very well, and into his Minsky model he poured much of the thinking of Schumpeter and Irving Fisher and other pre–World War II writers on the topic. Though this collage had much in it that had nothing to do with



Minsky, it did incorporate the instability dynamics set forth by Schumpeter, Fisher, and the early Minsky, as set out above. As the decades passed and asset bubbles and credit crises began to occur with greater frequency, Kindleberger's book became the most widely read text on the subject and is familiar to many. I will refer to Kindleberger's very familiar collage of instability theories as the classic Kindlebergian paradigm of financial pathologies.

Minsky focused not only on euphoric expectations as a driver of financial fragility; he focused as well on the complacency created by boom-time stability in reducing perceptions of risk. A lowering of the perceived risk of loss raised capital asset prices and encouraged higher levels of borrowing and lending. Stability begets instability, he said (Minsky 1970). This was a new argument that there could not be the endogenous stability of the stationary state of Leon Walras: as with euphoric expectations, this tendency toward endogenous perceived tranquility led to the dynamics of overshooting of capital asset prices and to top-heavy structures of private business debts.

In the real worlds of Schumpeter and Fisher there were recurrent price deflations, and it was these price deflations that eventually made private indebtedness untenably high. In Minsky's postwar world, central banks saw to it there were no more price deflations. So the propensity for financial fragility should have been muted. But by the 1970s it was clear it was not. There had to be a new driver of financial fragility that was taking the place of price deflation.

Minsky saw in the effort of central banks and governments to prevent the deflations and depressions of the past a recurrent need to "bail out" private agents whenever overinvestment and overindebtedness threatened the onset of old fashioned debt deflations. Starting in the 1960s, Big Government and an activist central bank intervened in financial markets again and again. Economic agents took notice and changed their behavior accordingly: as the financial authorities would move to reduce cyclical risk, private firms and households would take on yet more risk. Again, stability begets instability. This official-sector pursuit of stability, by reducing the perceived risk of loss, lifted asset prices further and promoted yet more top-heavy structures of private debt. Price deflation had in mounting moral hazard yet another successor.

In the last decade of his professional life, Minsky (1987) turned to Fisher's focus on predator investment bankers who fostered asset price overshooting and debt leverage for a fee and to Keynes' short-term gaming competitive money managers, acting also for a fee. In the 1980s the credit market went from being in the storage business to the moving business, from originating to hold to originating to distribute. With securitization, banks no longer had "skin in the game" and could lend imprudently, as the principals they served were too removed by the curtain of securitization to enforce the prudential behavior of the past. Money managers of liquid financial asset portfolios went from the long-term time horizon of investors in enterprise to the short-term time horizon of speculative traders in the pursuit of assets under management and increased fees. In this final period of money management capitalism Minsky saw in securitization a rise in asymmetric information and in the distortions of the principal-agent relationship (Minsky and Wray 2008); this was a new force that intensified speculative excess, higher valuations, and higher private indebtedness.

These principal-agent misbehaviors extended to corporate managements. In the 1980s, several key financial market rules changed and corporate governance changed. Corporate managers showered themselves with stock options. With a greater pecuniary incentive to lift their stock price, cash in their options, and become rich quickly, they became a new agent speculating at the expense of their principals: they began to borrow money en masse to buy in their own stock and the stock of other companies, which lifted capital asset valuations and their burden of private debt. Price deflation found yet another successor to drive rising indebtedness.

All of the above constitutes a body of theory whereby unfettered free markets do not converge to stable equilibria but endogenously depart from the ephemera of such equilibria onto disequilibrium paths. There is thereby a natural propensity for asset price overshooting and the buildup of private indebtedness to a point where asset markets must crash back to a mean, where debt service can withstand no shocks whatsoever, and where financial crisis becomes inevitable. It is noteworthy that in the differences between the theories of Schumpeter, Fisher, Keynes, and Minsky there is not one but many different dynamics that can contribute to asset price overshooting and untenable private indebtedness. Clearly, if several come to bear on markets all at once, there is a higher probability of extreme overshooting.

But are such overshootings of asset prices the same as asset bubbles? Perhaps they are not because, for all four of our economists of instability, economic agents are driven by expectations, albeit too emotive and unrealistic, of high risk-adjusted returns or by the pursuit of greater fees to be earned as agents in a market where the principals they serve—the investors among the public—chase after such bonanza returns. In a sense, all the behaviors discussed so far are in a sense “rational” but misguided by erroneous expectations regarding future outcomes.

What would be truly irrational asset “bubble” behavior? It would be when market participants chase prices ever higher even though they know with certainty that their fundamental value has been left far behind.

There has arisen in the last four decades a new behavioral school of economics and finance. There have been many contributors and endless academic papers. The focus of each contribution has tended to be very narrow, with no obvious implications for the “Great Debate” between the Walrasian general equilibrium school and our heterodox theorists of endogenous instability. However, there is a forest to be seen from all the trees: there is a similarity in the findings of the many contributions of the behavioral school. People in the real world are not rational as defined by general equilibrium theorists. They do not make complex calculations that maximize their utility. Above all their expectations of the future are not forward looking but are instead adaptive or extrapolative as Schumpeter, Fisher, Keynes, and Minsky all contend. This behavioral finance literature supports the endogenous instability school, but it does not explain the true irrationality of popular delusions and the madness of crowds that occasionally overtakes real-world markets.

But there is one behavioral economist who has made a discovery with obvious implications for the Great Debate among our two economic schools. He is Vernon Smith. He won a Nobel Prize for introducing lab-based empirical research into the practice of behavioral economics. In one of his hundreds of published papers quite well-on in his professional life he revealed a profound discovery: in lab trading experiments, economic agents will always bid an asset with a fundamental value known with certainty to a large premium above that fundamental value (Gjerstad and Smith 2014). Oddly, this profound discovery with a bearing on our Great Debate had nothing to do with his winning the Nobel Prize, and it has garnered little attention.

Back in 1961 when Smith (Gjerstad and Smith 2014) conducted his first lab-based empirical research he was an orthodox-thinking postwar economist who assumed that markets endogenously converge to equilibrium positions. He set up a lab experiment in which participants traded a perishable commodity of use. He found—as expected—that the lab trading quickly converged on the “efficient” market price.

Almost three decades passed when in the 1980s he decided to conduct a similar experiment in which the object traded would be a financial asset (Gjerstad and Smith 2014). He expected a similar efficient market outcome. The financial asset was as transparent as you could get: a series of cash payments that amounted to a fully advertised determinant sum by the end of the trading period. Smith expected that the lab participants would trade this asset quickly at its known fundamental value.

But they did not. To his great surprise, in every experiment, after brief oscillations around fundamental value, the participants bid the asset price above that value higher and higher. Of course, since the determinant cash value of the asset would be received by the end of the trading session, at some point the traded price crashed to its fundamental value.

Vernon Smith was surprised. Everyone was surprised. The experiment has been repeated well over 400 times. It has been repeated with students, with butchers, bakers, and candlestick makers, with captains of industry and captains of finance. They all bid the price well above known fundamental value. This excess in the price above fundamental value known with certainty Smith terms a “bubble.”

Smith concludes that this can only happen if people instinctively have adaptive short-term expectations, which he calls “myopic rational expectations” (Gjerstad and Smith 2014). To this he adds a natural propensity to “herd.” Once prices start to rise above a known fundamental value, market participants chase the rising trend on the assumption that the other guy will do so for long enough to sell to him at a profit. Such a revelation about real-world behavior proves the general equilibrium postulate of rationality is an academic economist’s plaything and nothing more.

There is one last important discovery from Vernon Smith. After the bubble in the first lab experiment crashed, Smith replayed the trading game with the same participants a second time. Once again a bubble emerged, but with only part of the amplitude and duration of the original one. When the trading experiment was run a third time there was no bubble behavior whatsoever. Smith concludes after repeated crashes there is “learning” that bubbles burst (Gjerstad and Smith 2014), and the propensity to play the bubble game is extinguished. It is fascinating that Edward Chancellor (2009) has looked at 12 of history’s real-world bubbles and has found that the same pattern of bubble/echo bubble/no bubble has emerged in every case.

It seems that in the real world, when adaptive expectations cause asset prices to overshoot, market participants sometimes chase the price trend way beyond what they know to be its fundamental value in the belief “the herd” will do so as well. This is when the asset market overshooting of Schumpeter and Fisher and Keynes and Minsky becomes pure bubble behavior. We do not have in the literature a good theory about when and how unrealistic expectations regarding fundamentals become the cynical, self-perpetuating herding behavior of a bubble. In those great extremes in which popular delusions ignite the madness of crowds—the Dutch tulipmania, the South Sea bubble, John Law’s Mississippi bubble, the Roaring Twenties, the Japanese madness of the late 1980s, and the US tech Super Bubble at the end of the 1990s—several dynamics of endogenous instability somehow combine to foster the full flowering of bubblemania.

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