

A Bubble on the Mighty Mississippi: An Application of a General Model of Speculative Bubbles to the Mississippi Bubble of 1716-1720

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ABSTRACT. Speculative economic bubbles are a common phenomenon but are not wholly understood. Bubbles progress through a series of nine stages. A shock triggers a profitable redistribution of assets, credit creation and new investments; speculation fuels the economy; doubts burst the bubble. The Mississippi Bubble, in early 18th century France, presents an example to which this model may be applied. The history of the Mississippi Bubble, and a brief IS-LM analysis, show that speculative bubbles can be like a lively party: loud and boisterous, but with a mess to clean up afterwards. The French economy was left with a national hangover which stunted business activity and scarred the communal psyche. The model of speculative bubbles applies well to the Mississippi Bubble.

I. Introduction

We know they can take all our money without remorse. We know they can come and go quickly. We know they can be large. We take these chances when we invest and run the risk of encountering one. But we do not truly understand how speculative bubbles operate in the economy.

Speculative bubbles in investment are ubiquitous self-sustaining market imperfections which can sometimes have the strength to cripple an economy. We recently saw one with the rise and fall of "dot-com" startups. We saw one in the savings and loan collapse. We saw one humble the Japanese economy. We see them all the time, all over the world. "Speculative excess,... a mania,... a crisis, crash, or panic can be shown to be if not inevitable, at least historically common" [Kindleberger, 2000, 2]. In the last 360 years there have been 450 major economic crashes resulting from speculative bubbles [Cohen, 1997, xvi].

For something so common and so destructive, we know little about how they work. We have to ask how a bubble can grow so quickly, what the results of a bubble are, and whether bubbles can be prevented or halted. Previous research has not produced a strong general model of speculative bubbles. Extant models are promising but mostly untested or incomplete. A synthesis of those frameworks is required to better explain

and understand how bubbles function. The model presented in this paper is a combination of existing models and is applied to a classic example of a speculative bubble, the Mississippi Bubble.

The Mississippi Bubble is unusual due to its monetary emphasis. Many consider it to be more of a monetary phenomenon than speculative bubble. It is to this unusual bubble that we apply our general model of bubbles, testing the model's applicability.

II. Blowing Up the Bubble

An economic "bubble" is something of a polite euphemism for a specific breed of financial crisis. Bubbles represent an enigma in economics: historically common, yet without an explicit description. They have been called an extended upward movement in price which then implodes, or unsound undertakings heavily laden with speculation [Kindleberger, 2000; Garber, 2000]. One simple yet blunt view of bubbles is Alan Greenspan's infamous critique of the mid-nineties stock market, calling the market's activity "irrational exuberance." These descriptions are facets, but not a complete definition. A definition is more easily constructed from multiple theorists' perspectives than supplied by a single theorist.

"Positive feedback" is the key to a bubble, giving a name to the blind speculative process by which it is created. Investors rush into the market fearful of missing an opportunity when they see others making money. For those left behind, "there is nothing so disturbing to one's well-being and judgement as to see a friend get rich" [Kindleberger, 2000, 15]. Fresh investors' demand for the asset increases its price, creating wealth for other holders who, in turn, use their new wealth to demand more of the asset, further increasing its price. Thus investors create a self-fulfilling prophecy that "may not necessarily reflect favorable business prospects" [Ohanian, 1996, para 14].

A bubble has been described as any deviation of an asset price from its value as determined by market fundamentals, an uncodified set of variables thought to determine an asset's price, including the current value, dividends, expectations about that asset, etc [Garber, 2000, 4; Ohanian, 1996, para 6-13]. But this definition would define the equity premium puzzle, peso problems, and momentary price fluctuations as bubbles. This is a poor single definition, but useful as part of a larger description of a bubble.

Kindleberger, in *The New Palgrave: A Dictionary of Economics*,

provides the most useful description. He defines bubbles as a sharp, smooth increase in asset price or prices, the first rise of which encourages expectations of further increases. New buyers who are interested in capital gains rather than dividends are attracted by those expectations, creating "positive feedback" and "price increases greater than justified by market fundamentals." This increase is usually followed by a sharp decline in asset price or prices, or a general financial crisis [Kindleberger, 1987, 281-2].

The descriptions above can be used to construct a more thorough definition. A bubble seems to be a larger-than-expected swift movement of money and assets, a deviation from market fundamentals, into a single good or sector of the economy, which accumulates value at a rate high enough to create profits attractive to those outside the traditional market. Once the initial fervor of trading subsides, positive feedback sets in, driving the asset price far above its regular level at a pace encouraging speculation. The bubble bursts when investors begin to doubt the value of their assets, killing that market, and possibly spreading the panic to other parts of the economy. This may result in a financial crisis, depending on the extent of credit in the economy.

III. Nine Steps for Modeling Bubbles

An economic bubble can be divided into several distinct steps common to financial crises. The model presented here combines Kindleberger's interpretation of Minsky [2000], and Spotton's [1997] model of speculative bubbles. A shock shifts the economy out of neutral, and credit and increased investment gets it rolling. Speculation speeds the economy along until doubts and panic slam on the brakes.

First, an exogenous shock of some kind alters opportunities for profit, revising the economic outlook for part of the economy. This shock can be a change of regime, a restructuring, a financial or technological innovation, or simply a shift in tastes and preferences. A feeling of economic prosperity begins to permeate the sector. The source of prosperity, and assets close to the source, are likely to become the targets of initially heated trading. Because of that early trading there is a promise of increased earnings potential, fuelling speculation in the second stage. The recent shock lends uncertainty about the final gains possible from speculation.

Second, new investors see the profit from the initial trading and buy

in with credit. In uncentralized financial systems the total expansion of the money supply depends on the general lending policies of financial institutions. This increase in liquidity lubricates the trading of an already highly liquid asset.

Third, positive feedback begins to take hold. Asset owners experience an increase in wealth when the asset price rises. Those holders are able to reinvest the extra wealth, further pushing up the asset price, beginning the cycle anew.

Fourth is the stage Kindleberger and Minsky call "euphoria." It is the stage of speculative "overtrading" where the asset price is rising only because of speculation. Investors overestimate prospective returns and tend toward excessive "gearing," i.e., purchasing on margin, installments, or agreement for future compensation. The "geared" price is low relative to the prevailing price of the asset and the potential future change in its price [Kindleberger, 2000].

Fifth, the number of market participants grows large enough to bring in buyers who are normally outside the fray, causing the asset's price to further deviate from its fundamental value. Fervor spreads "as firms or households see others making profits from speculative purchases and resales, they tend to follow: 'monkey see, monkey do'" [Kindleberger, 2000, 15]. The "gullible" public plunges into the market, pushing positive feedback to the point of "mania." "Manic" speculation detaches itself from truly valuable objects and follows objects of more questionable value. People concern themselves only with becoming rich rather than with understanding the process by which their wealth accumulates.

Sixth, speculative trading reaches a crescendo as a few insiders sell, taking large profits. There is hesitation at the top of the market as more insiders withdraw, balancing the influx of green investors. Prices reach a peak and level off. The rate of change of the price gently becomes negative. Initial doubts mount, calling into question the validity of the asset's current price. This is the beginning of the end.

Seventh, investors realize that the market may not ascend further, leading them worry about being unable to settle the debts incurred to purchase the asset. Some investors move out of the asset into other holdings or money. Gradually or suddenly, others may follow the leaders; the trickle of sales may become a torrent.

Eighth, distress selling sets in. Investors stampede in an effort to rid themselves of an albatross-like asset. In a step Minsky calls "revulsion," investors suffer from *torschusspanik*, the rush to get through the door

before it closes [Kindleberger, 2000,17]. Distress sales drive asset values below loan values, hurting creditors. Other lenders receive a harsher blow later in the stampede when borrowers default on their loans.

Ninth and finally, the panic continues until one of several possibilities is met. The price may fall low enough to encourage people to move to other more liquid assets. Trading limits may halt sales temporarily or permanently, such as the breakers on Wall Street. Or, a lender of last resort may step in, salvaging solvent institutions caught in the fall. The final impact of the bubble on other commercial activity is determined by the degree of integration of the real and financial sectors, and the survival of institutions able to extend credit to rebuild the affected part of the economy.

Just like their objects of speculation, bubbles come in all shapes and sizes. Some fit this model far better than others. This model may not deftly explain, for example, a bubble arising from economic restructuring after a coup in Freedonia, nor will it explain microeconomic bubbles of fad collections like Beanie Babies. At best, it is intended to fit most bubbles most of the time.

IV. Some Difficulties Under the Model and Behind the Name

Part of the debate over economic bubbles is whether or not the investors involved are behaving rationally. There are two positions concerning the rational investor. Rational expectations guide investors only towards profitable opportunities in bubble-prone markets, and only irrational investors buy in near the top. On the other hand, "number-drunk" irrational investors go by adaptive "attitudes," following far behind figures of authority within the market [Cohen, 1997]. Irrational investors are historically credited as the cause of mania and panic. They are witnesses to others' gains, and are trying keep up with the Joneses. The perspective of investor rationality is a morass of convoluted arguments, denying conditions of reality for the sake of preserving theory and for ease of computation. The position of this author is that investors involved in purely speculative trading during what may appear to be a bubble are neither wholly rational nor wholly irrational.

Some see "bubble" as nothing more than an insulting label applied to normal economic movements by unhappy participants and unwitting historians [Garber, 2000]. Garber believes that using such a label relies

too heavily on "irrefutable explanations" of "crowd psychology." He writes, "'bubble' characterizations should be a last resort because they are non-explanations of events, merely a name we attach to a financial phenomenon that we have not invested sufficiently in understanding" [Garber, 2000, 124]. It is difficult, if not impossible, to explain bubbles without the use of "irrefutable explanations" of behavior of investors. The herding effect which drives mass speculation cannot be explained without "irrefutable" psychological motives of envy, greed, and the like. Speculation is ultimately the engine of bubbles, and speculation cannot be explained by market fundamentals as Garber might desire. Some sets of "market fundamentals" appropriate a number of bubbles' factors and then deny bubbles ever existed. It is like General Motors making a Geo as a copy of a Toyota, and then denying that it copied the Toyota.

Here I will take care: though we have a string of financial events called a bubble, one must not adhere too rigidly to any set definition, arguing semantics until the sun rises. Definitions are important to qualify the phenomenon and enumerate influential variables. Yet they often hinder better understanding. Bubbles should not be defined into a corner; they should be recognized for the set of events they are. It is vastly more important to understand the sequence of stages that makes something a bubble than it is to have a definition set in stone.

V. The History of the Mississippi Bubble

The life of the Mississippi Bubble provides an instructive historical example with which to test our model. Compared with the Tulip Bubble and the South Sea Bubble, the Mississippi Bubble is the oft-neglected black sheep of classic bubbles. It is the 600-pound gorilla with an attitude disorder hidden in the shadows of economic history. At the center of the Mississippi Bubble was "government connivance" and a "large-scale money printing operation and a government debt-for-equity swap" [Garber, 2000, 87 & x]. Our story begins in France with the grand scheme of the gorilla's master before the animal got out of hand.

In 1716 the French economy was in shambles. It was suffering from the extensive excesses and expenditures of Louis XIV, and a large national debt left from the War of Spanish Succession. The recent war was costly because of the growing size of armies and the price of mercenaries. Replacing an army's worth of older matchlock muskets with flintlock muskets was taxing on government coffers [Cohen, 1997].

Corrupt tax farmers had not kept the flow of revenue steady [Galbraith, 1990]. The "draconian" policies of the Regent of France had done little to aid the economy. Outside of a few merchants' associations there was no credit system, the market was inundated with government debt, and the economy was in a recession [Cohen, 1997]. It was a barren economic landscape John Law intended to reform.

John Law was the son of a Scotch goldsmith and banker from Edinburgh. His character and financial skill gained the favor of the *Duc d'Orléans*, the Regent, who welcomed him and his ideas to rebuild the French economy. Law was interested in banking and controlling the supply of money; replacing specie with Fiat money was the crux of Law's scheme, a bold and uncommon strategy in the early 18th century. He believed that barter in France, necessitated by a general lack of currency, inhibited trade in the economy and caused high interest rates, unemployment and underemployment [Murphy, 1995]. Money, a more efficient alternative to barter, increased economic activity. The solution to unemployment and underemployment was to demonetize specie, substituting a more liquid instrument.

An abundance of money which would lower the interest rate to 2% would, in reducing the financing costs of the debts and public offices etc, relieve the King. ...It would enrich traders who would then be able to borrow at a lower interest rate and give employment to the people. [Law, in Murphy, 1986, p. 121]

A move from specie into Fiat money had its difficulties. Money of any sort is not always a good store of value when the value of one's money is determined by the prevailing price of the asset. The classical dichotomy reveals the fatal flaw of Law's plan: beyond eliminating barter, any increases in the money supply will only weakly affect the real sector of the economy, mostly creating inflation in the long run. As we shall see, Law did not consider these possibilities.

VI. Law's Scheme On Paper

Murphy credits Law with composing a four part plan to govern a rejuvenated French economy [1986]. The first phase was the establishment of a commercial bank which would extend credit lines to investors and issue bank notes to replace specie in circulation. This would

allow Law to determine the money supply through loans. Ideally, the bank would not be commercial. It would be a national bank or quasi-central bank like the Bank of England at the time.

Phase two involved national debt management operations through a private company. A firm modeled after the South Sea Company would take over the government's outstanding debt by purchasing it from the public using funds from the sale of company stock. Eventually the company would become the economy's primary holder of government debt. The interest rate on the government debt would be reduced in exchange for monopoly trading rights.

For phase three, the bank and the company must be allowed to merge or otherwise coordinate actions. Linking the two would allow coordination of monetary policy with debt management policies. Two forces which may otherwise be counterproductive would be in concert to help the economy grow by increasing the money in circulation and decreasing the interest paid on government debt.

The final phase, initiated once the others were established, would modify the domestic exchange rate to favor notes issued by Law's bank. The exchange rate of specie for bank notes would be raised to induce holders of wealth to substitute their coin for paper money. This would decrease the amount of specie in circulation, making notes the de facto method of settling transactions.

Law's scheme was to breathe new life into the dilapidated French economy by creating a method of financing economic activity through the expansion of credit and demonetization of specie. This was a version of Say's Law, supply creating its own demand: Law believed that a fresh abundant supply of money would encourage new economic activity, creating a demand for the money. To begin the process he raised his bank from the barren landscape.

VII. Law's Scheme In Reality

The *Banque Generale* was quietly founded in May 1716. It was too undercapitalized to be initially effective as a rejuvenator. It lacked a capital base large enough to effect substantial amounts of money supply creation through loans [Murphy, 1986]. The bank notes it issued, *livres tournois*, eventually caught on in 1717, effectively recreating credit in the

French economy [Spotton, 1997]. The *Banque* grew, soon fulfilling phase one. Alone, its utility was limited. In phase two, begun in June of 1717, the *Banque* proved useful: the credit it issued armed speculators who were waiting for assets to buy.

An opportunity for national debt management appeared to Law through rumors of the prospects of rich gold and silver mines in central North America. Further, the monopoly on trade with Louisiana and control of Canadian beaver pelts proved attractive to Law [Garber, 2000]. When Crozat wished to sell the lands around the Mississippi, Law chartered the *Compagnie d'Occident* to take over. The *Compagnie* was financed by subscriptions on shares to be paid in cash and government debt. This allowed the company to convert government debt into long-term loans in exchange for government-sanctioned monopoly rights. The first subscriptions were sold in June and September of 1717. The 200,000 shares, called *mères*, sold for around 150 *livres* each [Murphy, 1986, tables 4 & 5].

Trading of *Compagnie* stock was normal throughout 1717 and 1718. The company, though, kept expanding. With Law at its helm, it acquired the rights to the tobacco and slave trade monopolies in July and December of 1718. Shortly thereafter, in May 1719, the *Compagnie* bought out the *Compagnie des Indes* and *Compagnie de la Chine*, controlling trade with India and China. The June 1719 share issues, called *filles*, were easily obtainable. A *fille* cost 550 *livres* and was paid in 20 installments, but subscription was restricted to those who owned four *mères* for every *fille* they wished to purchase, creating a new demand for *mères* [Murphy, 1986, table 4].

Now only one trading monopoly was outside Law's control. Once the *Compagnie d'Occident* absorbed the *Compagnie d'Afrique*, it was reorganized as the *Compagnie des Indes*. As of July 1719, the *Compagnie des Indes* had a monopoly on all French trade outside Europe.

The *Compagnie* bought the rights to the French Mint in late summer of that year. To finance the purchase, it issued 50,000 shares of stock, called *petite filles*, at a price of 1000 *livres*. The subscriptions were on terms similar to the June issue: 20 payment installments, and buyers must own four *mères* and one *fille* for every *petite fille* purchased [Murphy, 1986, table 4]. The market price of *Compagnie* shares rose to 1800. Shortly afterward, the company leased the rights to collect French taxes. Share price rose to 3000 [Garber, 2000, 96].

Law strategically encouraged increased trading of *Compagnie* stock.

He promised a high dividend of 12 percent at a time when money was flowing from the *Banque* and interest rates were low. Most of all, stock was offered on very good terms to draw "people of small means into the vortex of speculation" [Davis, 1887, p. 37]. Generous credit lines were extended to buyers by the *Banque* [Cohen, 1997].

The *Banque Generale* also grew and was renamed in the last year. With *Orléans'* official, yet non-monetary, support, the new *Banque Royale* became a quasi-central bank in December of 1718 with its notes guaranteed by the Crown [Garber, 2000; Murphy, 1986, table 5]. Taxes could be paid in *livres*, and *livres* were to be the denomination of indebtedness. Note issuance also increased, extending French credit; by autumn of 1719 the *Banque* issued over one billion *livres*. This placed a massive amount of money in the hands of speculators who had few investment alternatives as lucrative as buying more *Compagnie* shares [Spotton, 1997].

In September 1719 the *Compagnie* initiated a plan to redeem all outstanding government debt, a total of 1.5 billion *livres*. To raise money to purchase the debt from the public there were to be a series of shares issues. On September 26 and 28, and October 2 and 4, 324,000 shares were released at a market price of 5000 *livres* each [Garber, 2000, 96; Murphy, 1986, table 4]. Subscriptions, payable in ten installments of 500 *livres*, funded the plan. This made the *Compagnie* the only major holder of government debt in the French economy. Investors could now choose between the *Compagnie*... or the *Compagnie*.

The recent share issue flooded the market with credit, adding greatly to the steadily growing pool of money circulating as a result of loans. Banknote circulation increased by over 600 million *livres* in September and October. Inflation was nearly 30 percent between May and December 1719, with more to come [Hamilton, 1936, 79].

In October a consolidated loan was offered to the French government [Murphy, 1986, table 5]. Relying on his conception of the economic power of an easy supply of money, Law reduced the interest rate on the government loan to 2%. This fueled investors' expectations of future earnings and strengthened their confidence in the *Compagnie*, whipping speculation into a frenzy. The price of an individual share began to ascend toward 10,000 *livres* [Garber, 2000, 97].

Many accounts tell of actions taken specifically to enliven speculation. Early in the fall of 1719, Law purchased call options for *Compagnie* shares in six months' time at a price of 40,000 *livres* in a move

tailored to demonstrate his confidence in the speculative motion of the stock [Davis, 1887, 34]. Rumors were spread by Law's agents that Louisiana held gold mines of greater wealth than those of New Spain or Peru [Hamilton, 1936]. To further assure investors of a profitable future, Law recruited a battalion of Parisian mendicants, gave them shovels, and marched them through the trading areas of Paris towards the shipyards as though they were being sent off to Mississippi to mine gold and silver. Days later, many of those beggars were seen returning to their old haunts, lending a *faux* air to the mines; "there was no evidence of the gold, but this... was no time for doubters or doubting" [Galbraith, 1990, 38].

Law sought to boost investment again in December 1719. When dividends stood at between two and four percent, the *Compagnie* fixed dividends for the coming year at 40 percent in anticipation of profits [Davis, 1887, 41-2]. This was too good to be true.

The *Compagnie des Indes* was definitely a 600-pound gorilla. At that point, outstanding shares of the *Compagnie* were valued at over 5.4 billion *livres*. Law estimated the total value of French national wealth at 30 billion *livres* [Garber, 2000, 97].

Things continued to go well for the Law and the *Compagnie*. Law was appointed Controller General of Finance in charge of determining the method of financing all government expenditures. In February 1720 the *Compagnie* assumed control of the *Banque Royale*, placing the economy's source of credit under the company's aegis. At the same time *Orléans* declared *livres tournois* to be legal tender for all transactions [Murphy, 1986]. Phase three of Law's plan had been accomplished.

This consolidation created a powerful combination of control over French life. Responsibility for all French government finances, for the size of the supply of credit in the economy, and for the *Compagnie des Indes* lay in Law's hands. As CEO of the *Compagnie* he controlled all non-European trade, decided when and how much coin should be minted, collected all French taxes, and held most French debt [Garber, 2000]. His *nouveau riche* economic authority began to rival the traditional authority of the Regent *Orléans*. But it was all too good to last. Share prices peaked at 10,010 *livres* on January 8, 1720 [Cohen, 1997, 181].

And then the gorilla's mood began to change.

The Regent sold his company holdings near the peak, receiving 900 million *livres* for his 100,000 shares. This move tripped market confidence. Stock price dropped in March, to around 9000 *livres* [Murphy, 1986, 129]. A once-secret *Compagnie* office for the purchase

and sale of shares began publicly trading with shareholders, pegging the price of a share at 9000 *livres*. Money was printed by the *Banque* to pay for the purchases of stock, flooding the market with liquidity. In essence, *Compagnie* shares were monetized and given denominations of 9000 *livres*. By May the total issue of *livres* reached 2.1 billion [Cohen, 1997, 182].

The first seeds of doubt in the system crept in during the spring of 1720. People began to cash out their shares to invest in items of tangible wealth. Favored items were expensive; land and estates, works of art, fine jewelry, etc. all increased in price as wealth moved from *Compagnie* shares to real goods. By May prices had increased nearly 100 percent over the previous year [Hamilton, 1936, 85 & 92].

Attempts to initiate phase four of Law's scheme slowly soured public sentiment. Throughout the meteoric rise in *Compagnie* shares, the value of specie in terms of *livres* was increased several times, encouraging redemption for bank notes. A series of proclamations by Law and the Regent created a distaste for specie. The first major restriction was a requirement that all payments of amounts greater than 600 *livres* be made in notes or gold. As gold was scarce, the restriction essentially mandated that all large transactions would be made in notes. Other edicts followed: one must not hold more than x amount of specie, and x decreased often by regulation; transactions must only be conducted in *livres*; gold and silver coin in one's possession must be redeemed for bank notes; hoarding of prohibited specie will result in severe punishment. The French specie-holding public did not care for the forced redemption [Davis, 1887].

The death knell of the scheme sounded on May 21, 1720. Law decreed that shares would follow a schedule of stepped devaluation. "It was calculated to destroy confidence, when confidence was necessary to restore the system," and shareholders exploded in outrage [Davis, 1887, 50]. Effigies of Law were burned in the streets, and violence temporarily closed exchanges. Forced to seek refuge at the Regent's palace, Law revoked the decree six days later, then fled France. Contemporaries and historians question whether Law's adversaries planted the idea of devaluation.

Through the summer and autumn *Compagnie* share prices slowly fell. Following the decree shares lost half their value. With few other investment alternatives, the value that remained was cut in half again only over the next six months [Garber, 2000]. An edict of October was the last nail in the coffin of Law's scheme. It declared that bank notes issued by

the *Banque Generale* and *Royale* were no longer legal tender. The system was dead. The grievances of a people impoverished rang out in the pasquinade of an agioteur:

My shares which on Monday I bought
Were worth millions on Tuesday, I thought.
So on Wednesday I chose my abode;
In my carriage on Thursday I rode;
To the ballroom on Friday I went;
To the workhouse next day I was sent.
[Davis, 1887, 52]

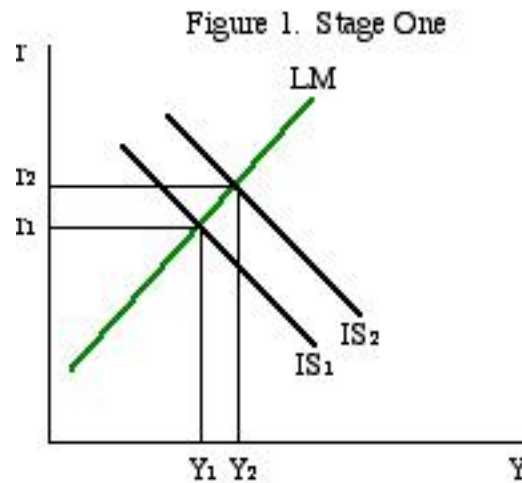
It was like thinking you were raising Koko only to find it was King Kong in disguise.

VIII. What Happened? Applying the Model

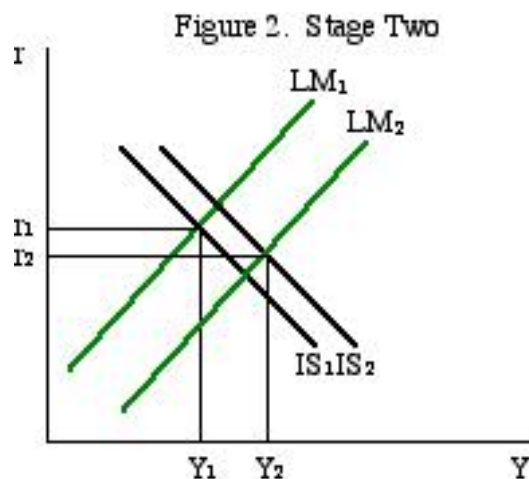
The history of the Mississippi Bubble supplies a unique skin with which to cover the bones of the Kindleberger-Minsky-Spotton model. Cohen was the first to apply the Kindleberger/Minsky model to this bubble, identifying specific events representing each stage [1997]. In applying our model we must remember that it is intended to explain most bubbles most of the time. The Mississippi bubble has its own nuances and peculiarities which can only be accounted for with a tailor-made model. Therefore, this general model will not fit the Mississippi Bubble perfectly. However, the interplay of expectations and money in the phenomenon suggests that the IS-LM model may be appropriate for illustrating macroeconomic effects. It must be noted that IS-LM analysis deals with real investment in capital goods, rather than nominal speculative investment in overvalued stock. The following illustration will not precisely represent all activity in the French economy because most investment was speculative in the Mississippi Bubble.

Stage one: an exogenous shock to the economy. John Law's appearance in France was the *causa remota* of the bubble. He convinced the Regent to allow a new bank and to allow a new company. The possibility of economic recovery, however distant, whets investors' appetites, creating favorable shifts in expectations for the future. Law was seen as a financial genius, and his leadership of the economy was comforting and encouraging. The IS curve shifts to the right because of

higher profits expected in the future. Interest rates rise as investors compete for funds, and output rises.

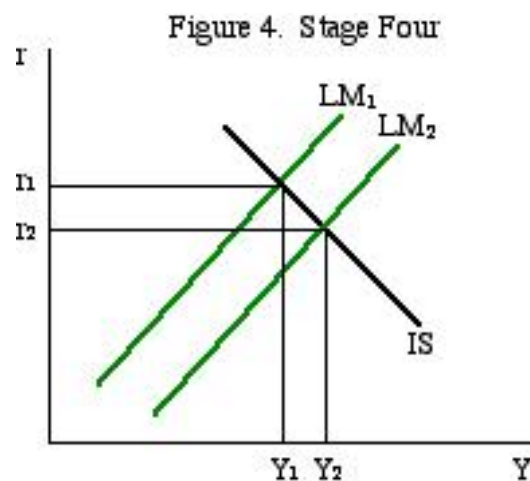
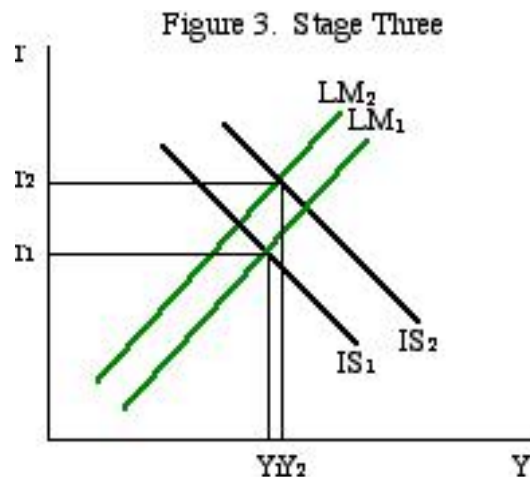


Stage two: credit creation and expansion. The creation of the *Banque Generale* reestablished credit availability. It issued its own bank notes in volume, and granted credit on easy terms. The *Compagnie d'Occident* was the outlet for the new liquidity, offering share issues of *filles* and *petite filles* on affordable and convenient terms. The *Banque* expands the money supply, shifting the LM curve to the right. The increased investment shifts the IS curve to the right. This financial investment shifts the IS curve because it is the first investment in the *Compagnie* even though it is nominal investment; it is assumed that there were real effects on production from this groundbreaking round of investment. The interest rate falls and output increases.



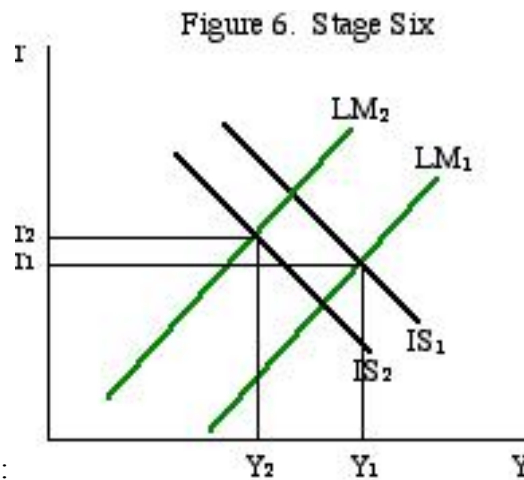
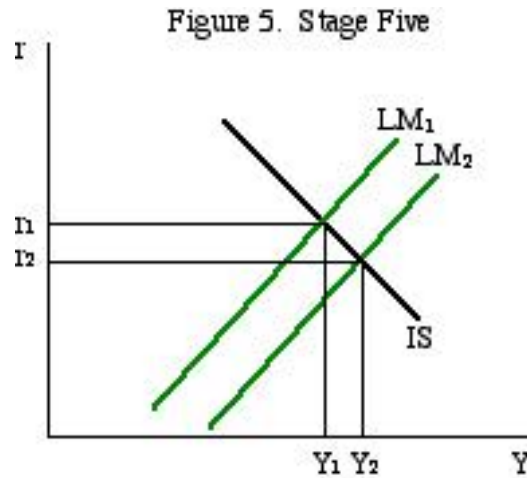
Stage three: positive feedback. Investors owning *mères* benefited from the sale of *filles* and *petite filles*, increasing their wealth. They took their new wealth and reinvested it in the *Compagnie*. In the early stages only share prices were rising, not the general price level, presenting investors with growth in real wealth, increasing subsequent investment and probably consumption. The increase in investors' wealth shifts the IS curve to the right, and the LM curve to the left because money demand has increased. The interest rate increases and output rises slightly.

Stage four: overtrading. Options and futures markets developed in early autumn, indicating the beginning of pure speculation. Gearing surfaced based on the very easy terms of the September and October 1719 share issues. Even with large share issues from the *Compagnie*, share prices increased nearly threefold. Speculation, purely nominal investment, does not shift the IS curve. The *Banque's* continued note issues moves the LM curve to the right, mediated by a continually increasing demand for money due to positive feedback. The interest rate falls and output rises.



Stage five: the general public plunges in. More and more investors were drawn in to *Compagnie* shares in the fall of 1719, absorbing the September and October issues. Share price was pushed from 6000 to 10,000 *livres*. Law offered "assurances" to investors: his own purchases of shares; rumors of greater mines than expected; and a hoax of false miners. Nominal speculative investment increases but does not shift the IS curve because of a failure to link to real financial variables. In fact, if

any shift in the IS curve could be identified, there would likely be a decrease due to increasing speculation siphoning off funds which would otherwise be used for real investment. Credit expands again, shifting the LM curve right. The interest rate falls and output rises.

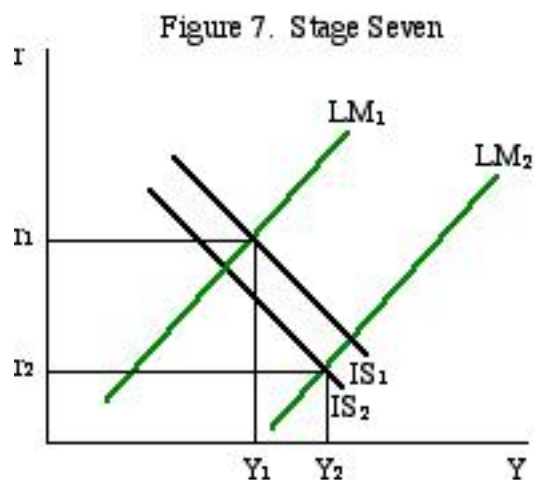


Stage six:
insiders sell out

near the peak. In what must have been an obvious signal of the changing winds, *Orléans* sold his company holdings, suddenly making available 100,000 shares. As *Orléans* owned nearly one-sixth of all investment in the economy, his sale would cause the total amount of investment to

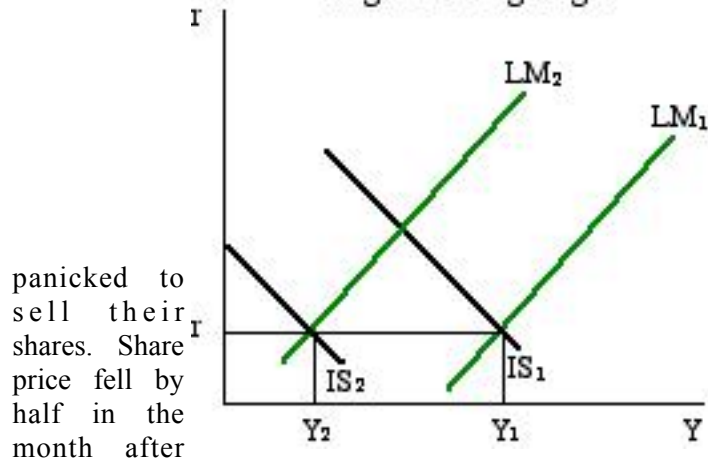
decrease, moving the IS curve to the left. Again, even though this is nominal investment there were some real ramifications. Not only did *Orléans* cash out of the *Compagnie*, but he held the profits from his sale and did not reinvest them. This amounted to a decrease in potential real investment. The demand for money rises sharply, shifting the LM curve to the left. The interest rate rises and output falls.

Stage seven: doubts and printing money. After other insiders sold their holdings, doubt spread. People became aware of the inflation around them, and were aggravated by the restrictions on specie. Pegging shares' value may have indicated the *Compagnie's* concern over falling prices. Poor expectations for the company's future decrease speculative investment and real investment is caught up in the cloud of doubt. The IS curve shifts left. Massive note printing from pegging the price of shares floods the economy with money, creating a huge rightward shift in the LM curve. The interest rate falls and output increases.



Stage eight: distress selling and panic. The decree of May 21st intending to devalue shares was the action that killed the system. Investors

Figure 8. Stage Eight

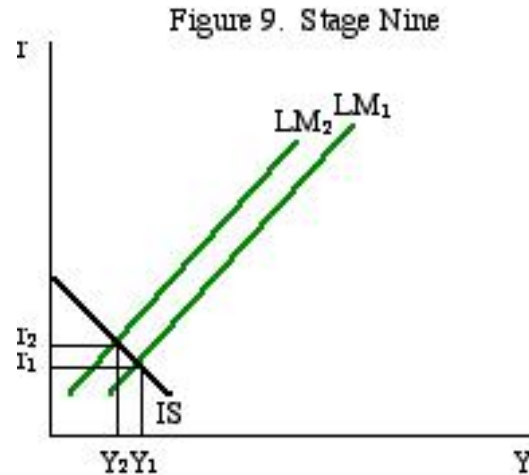


panicked to
sell their
shares. Share
price fell by
half in the
month after

the announcement. The fall in investors' confidence and aversion to investment in the *Compagnie* shifts the IS curve left. Again, both nominal and real investment are caught in the contraction. The rush to liquidate *Compagnie* holdings increases the demand for money, causing the LM curve to jump drastically left. The interest rate remains roughly the same and output plummets.

Stage nine: continued panic and the end. The repeal of the decree of May 21st did little to stem the tide of sales. Share prices fell slowly only because the financial economy had been reduced to essentially two items, *Compagnie* shares or *livres tournois*. As both were losing value investors attempted to pick the asset which would lose the least amount of value. What real investment there was in the economy had been cut to the quick, destroying those possibilities for lucrative investment. Both nominal investment and the price level continue to drop, leaving real investment and the IS curve essentially unchanged. Money is still in increasing demand, shifting the LM curve left. The interest rate rises, and output falls.

IS-LM analysis shows that interest rates and output changed slightly from their initial position. If interest rates increased, they seldom stayed high for long; output fluctuated but increased, only to be shocked back to lower levels. There was not enough time for the economy to grow enough to accommodate the new level of liquidity. Thus, when the *livres tournois* disappeared, so did the illusion of growth.



There is a limitation to our illustration using the IS-LM model. We have violated the assumption of sticky prices. Yet this framework has been used because most real variables remained relatively unchanged. In the Mississippi Bubble, consumption and investment increased at the same or at a greater rate than prices. The market for real money balances remained relatively stable because the rate of money supply growth was the same as or greater than the rate of inflation. It was as if the IS and LM curves were in an anchored boat, staying together despite the ebb and flow of the current. In a relative sense prices appeared sticky, only requiring the assumptions to be bent, but not broken.

IX. Spinning Economic Wheels

John Law believed that expanded economic activity would naturally follow a refinancing of the economy. Law overlubricated the economy, and no real growth was evident by the curtain call. At the final stage, real interest rates and output differed little from their original values. He greased the wheels and track of the French economy. The wheels only spun, showing speculation. And the track only heated up, showing inflation. The wheels never caught hold, failing to creating any real growth in the economy. But the rate at which the wheels spun and track heated was not entirely Law's fault.

The Mississippi Bubble caught and spread virulently through French wallets like a firestorm in bone-dry tinder and brush. Among the reasons

why the bubble enveloped the economy so strongly and quickly was that those pursuing shares had the short end of asymmetric information. Law supplied all the information, and he said the future was rosy. With ridiculous dividend estimates he kindled false expectations. In fact, he had specifically been deceptive to heighten speculation in the name of "assuring investors." Most were ill equipped to judge the potential of a company whose holdings were half a world away, or were mythical like the gold and silver mines. Few understood enough about business or finance to comprehend what Law's actions meant for the market. Those who did cashed out early, making a tidy sum. By keeping information close, Law's scheme fleeced the market.

At the time, the *Compagnie des Indes* was a step forward for French business, representing "an epochal change" capable of remaking the economy [Garber, 2000, 8]. It was "the next big thing" and people were excited about that. One can get caught up in novelty and ingenuity against one's better judgement. Yet to some extent, investors' enthusiasm had a foundation: the rise of the *Compagnie* did have the potential to remake the economy.

In 1716 the French economy had almost nowhere to go but up. That made the loss of potential real gains more painful. To illustrate, think about what happens when the Internal Revenue Service mistakenly gives a refund of \$2000 to both Mr. Jones and Mr. Smith, demanding the money back soon after the refund. Mr. Jones earns \$20,000 annually, and the refund is 10 percent of his income, a sizable amount. Mr. Smith makes \$80,000 per year; the refund is less important to him, only 2.5 percent of his income. The increase and subsequent decrease in wealth is more significant for Mr. Jones than Mr. Smith. Mr. Jones is likely to be happier when the refund arrives, and more distraught when it departs. The French economy, as with Mr. Jones' wealth, rose a long way in a short amount of time, and fell a long way just as rapidly.

X. Stitches and Scars

The bubble did have an economic impact, though not as lasting as the social impact. Spotton claims the net effect of the Mississippi Bubble on the French economy was minimal because the *Banque* was tied almost exclusively to the *Compagnie*, and therefore they collapsed together without affecting the real sector [Spotton, 1997]. The real sector was affected. Historians are unclear as to the magnitude of the increase in the

money supply and the exact rates of inflation, but somewhere between a twofold and fivefold increase in banknote circulation resulted roughly in a doubling of general prices. The French acquired a distaste for bank notes. Only very small debt and equity markets remained active, and international financial ties developed during the bubble evaporated when *Compagnie* shares fell and the *Banque* disbanded [Schubert, 1988]. The body controlling tax collection, government debt, the mint, and overseas trade disbanded, requiring those to be reorganized. The bubble's collapse drastically slowed the further development of banking and the expansion of industry. In short, it made for a depressed economy.

The indelible permanent effect was on the French psyche. The French had to suffer through a collapse and reorganization of an enlivened economy in which they had placed their full hopes and confidences. Together, the Mississippi Bubble and the failure of assignats during the Directorate period of the 1790s made the French "paranoid" about banking for many years [Kindleberger, 2000]. If you're mad enough to burn someone in effigy and join homicidal mobs searching for him, then that anger will probably stay with you and pass on to your children.

XI. Could the Mississippi Bubble Have Been Prevented?

Without argument there are imperfections in markets which may lead to speculative bubbles. These imperfections are mostly spontaneous or self-sustaining, like the positive feedback mechanism, and are difficult to prevent or control. A country's economic memory is imperfect as well, causing disasters to repeat themselves [Kindleberger, 2000]. Safety measures are required to correct those blemishes. There are a few policies which had the capability to mediate the effect of Law's speculative scheme on the economy, but would never have been implemented.

Lending restrictions could have constricted the flow of funds. A policy of reviewing the risk and uncertainty of a loan could reduce speculative trading on credit. The *Banque* was too concerned with creating credit in the economy to worry about to whom it lent the money. Lending restrictions based on investment risk would have done no good because the *Compagnie* was the target of the funds and Law chaired it and the *Banque*. Practices which would have gauged the credit worthiness of the borrower would have been mostly useless in an economy with so little credit.

Margin rates require a specific amount of equity, a fixed amount or a

percentage, to be held to purchase stock. Margin rates are intended to reduce pyramiding, using loans to get more loans, *ad infinitum*. Margin rates would have failed because the easy payment plans on which the shares were offered would have circumvented the requirements of equity on hand at the time of purchase. The French economy was a giant credit pyramid by the time the Mississippi Bubble burst. In a few short years the scheme created a cache of value worth one-sixth that of national wealth.

Once the fall of a bubble begins only a central bank or lender of last resort can stop it. Central banks "know how to handle financial crises: throw money at them, and after the crisis is over, mop the money up" [Kindleberger, 2000, 214]. The Federal Reserve effectively abated the 1987 crash in just such a manner. The *Banque* did exactly the wrong thing, flooding the economy with money all through the bubble, and never cleaning up after itself. Investors threw caution to the wind even without the moral hazard created by a predictable and visible lender of last resort. It is unlikely that there was any one bank or conglomeration of banks which possessed enough funds to rescue the French economy. Perhaps that is why investors reveled: "eat, drink, and be merry, for tomorrow we die!"

Could the Mississippi Bubble have been prevented? No. The government would have appeared foolish to question the pace of a seemingly miraculous economic rebirth. All the possible restrictions were, in one way or another, negated by the peculiarities of the Mississippi Bubble.

XII. Knee Deep in the Mississippi Mud: Summary and Conclusions

Whether in Florida swamp land, the railroad, tulip bulbs, junk bonds, or mythical gold on a distant river, bubbles are an inevitable part of a market economy. At some point or another people will get swept up in the excitement of something new and unique, in the clamor for capital gains, and in the evacuation of a backfiring market.

Above, economic bubbles were defined in a rather protracted way. Having many words in the definition assured that a "bubble" was painstakingly specified. But is it specificity we want? If you ask four people on the street what love is, you will probably get four different answers. If you ask four economists what a bubble is, you will probably get four different answers. Perhaps the best definition for speculative

bubbles is that they are "like pretty women: hard to define but recognizable when encountered" [Kindleberger, 2000, 3].

If bubbles are easy to recognize it means that there is a distinct pattern to a bubble's life. Elaborating on Kindleberger/Minsky and Spotton, a model was created describing the stages of development of a speculative bubble. Following an exogenous shock, forecasts and expectations are revised, casting a rosy hue over the market. Initial gains fuel further investment, drawing more and more people into the market until the general public jumps in. Insiders sell out at the peak, creating doubts in others' minds. Doubts snowball, leading to a *torschlusspanik* to sell assets while they still have value. The panic continues until it wears itself out or is stopped by an external body. This model is not applicable to all situations. Further research is required to craft a model which is applicable to specific macro shocks, or micro-level bubbles.

The Mississippi Bubble is a prime example of a speculative bubble. It was the first episode to rely on excess credit and a changing money supply as an injection to prime the speculative pump, and was two centuries ahead of its time in demonstrating the power of monetary controls over Fiat money. Control over the economy was centralized in one man's hands as "Law's scheme was more audacious than the normal Wall Street operation in that he was attempting a corporate takeover of France" [Garber, 2000, 106].

Every stage of our nine-step model is represented in the Mississippi Bubble. Law was the catalyst, creating the *Banque* and the *Compagnie* as anchors for the new economy. Speculation in the *Compagnie* drove shares to rarified heights from which the only path was collapse. The panic tripped the French economy in a trap of liquidity, causing a deep recession.

The bubble spread rapidly because the economy was ripe: it was ready for change, and blindly followed Law's lead and misinformation. The French people, rather than the French economy, bore the brunt of the bubble. Social memory proves to be much longer than economic memory. IS-LM analysis showed that while output appeared to increase throughout the bubble, there was little permanent growth. The economy only spun its wheels and created inflation. Using current techniques the bubble could not have been prevented or halted.

Nearly three hundred years ago, in the lingering shadow of Louis XIV, the Mississippi Bubble seems to have little relevance to understanding today's economic environment. But it showed us its backbone. Knee deep in the mud of the Mississippi Bubble we find a

skeleton, a model, whose pathology solidifies the place of Law's scheme in the history of speculative bubbles.

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