Book Review

Famous First Bubbles: The Fundamentals of Early Manias. By PETER M. GARBER. Cambridge, Mass.: MIT Press, 2000. Pp. xi+163. $24.95 (cloth); $13.95 (paper).

Our ancestors would have blamed the gods. You make a shrewd investment. A few months later that investment has grown spectacularly, making you richer than your wildest dreams. But then prices tumble. If you're lucky, you're wiped out; if less lucky, your creditors are coming to seize the house and the chariot. A cruel world needs a story. Zeus must be mad.

We are too sophisticated to believe in the ancient gods. We believe in psychology: the "madness of crowds," the "irrational exuberance" and "panic selling" of traders, "herding," "overreaction," "underreaction," "self-attribution bias," "contagion," and so forth. There is a story here for any event, which makes for reliable comfort in times of stress. Who wants to hear "we're not sure; we need more research"? And divining the whims of an irrational market still needs high priests. Consulting fees have gone up, and modern universities are a lot uglier, though somewhat less drafty than the Parthenon, but not much else seems to have changed. (Admittedly, the language takes root in a serious experimental social science and recalls disciplined attempts to bring psychology to economics. But for storytelling, these roots just give an extra whiff of authenticity.)

Beliefs need myths. Ours start with tulips, John Law, and the South Sea. Like the myths of antiquity, these are ritually invoked anytime one wants to "explain" a troublesome new event, from 1929 to the East Asian and Russian crashes to the rise and fall of the dot-coms, as a "bubble." In a bubble, as in a Ponzi scheme, speculators are supposed to buy an asset *knowing* that the price is far above any "fundamental value," on the expectation that prices will rise still further before they eventually crash. Since prices cannot rise forever, such a bubble must involve an "irrational expectation," a belief that the guy you will sell to is dumber and will not see the crash coming.

Peter Garber has pricked these bubbles. He looked closely at the historical record of the tulip mania and the Law and South Sea events. He found that most of the fabled elements are just not true, and a strong smell of a fundamental explanation.

Here are some surprising facts about tulip mania:

I thank Sherwin Rosen, who suggested that the *JPE* review this book and offered many useful suggestions as editor when I decided to write it rather than ask someone else to do so. Alas, this review was the last thing Sherwin and I did together at the *JPE*.

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1. Tulip speculation used futures contracts, which were illegal. The threat of being excluded from trading was sufficient to get people to pay for small losses, but buyers of futures contracts could and did default on large losses, with backing by the courts.
2. Buyers paid only one-twentieth of each contract price up to a maximum of 3 guilders.
3. The main evidence for a bubble in the classic stories consists of very high prices paid for specific rare bulbs in the winter of 1637, prices hundreds or thousands of times higher than prices for those bulbs years or decades later. (There are no price data immediately after the crash.) Garber documents that other rare tulip varieties continued to command high prices long after the mania, even to the present day, and that "bulb prices decline fast: it is their nature." The first bulb captures the present value of its offspring. Prices then decline rapidly as the supply expands, and newer varieties still are introduced.
4. There *was* a fundamental shock: "In France, it became fashionable for women to array quantities of fresh tulips at the tops of their gowns. Wealthy men competed to present the most exotic flowers to eligible women, thereby driving up the demand for rare flowers. Munting (1696, 911) claims that at the time of the speculation a single *flower* of a particular broken tulip was sold for 1000 guilders in Paris. This was a final demand price for a consumption good and not the [speculative] asset price of the bulb."
5. The myth tells of a large inflow of foreign money, lending to speculate in tulips, and economic distress after the crash. There is no evidence for these parts of the story, especially (and most importantly) the last. Shares in the Dutch East India Company rose from 229 in March 1636 to 412 in 1639.

To Garber, then, the high prices in futures contracts for specific rare bulbs are no mystery. Though it was never part of the tulip myth, he does find a puzzle in a more moderate speculation in *common,* generic bulb futures and a sudden crash on February 6, 1637. The most reliable case (Swisters, chart 6) suggests a 35 percent price fall. As Garber summarizes, "these markets [futures markets, conducted in taverns] consisted of a collection of people without equity making ever-increasing numbers of 'million dollar bets' with one another with some knowledge that the state would not enforce the contracts. This was no more than a meaningless winter drinking game, played by a plague-ridden population that made use of the vibrant tulip market."

The Mississippi and South Sea Companies, whose prices rose and then crashed in 1720, were far from the private companies we envisage in thinking about stock prices today. Both companies sold equity to buy up questionable government debt and negotiated debt payments with the governments. The king was a large shareholder of the Mississippi Company; the South Sea Company generously bribed members of Parliament with shares. Both companies acquired government monopolies on various kinds of trade and expounded ambitious plans for commercial expansion of that trade, also financed by equity. By January 1720, Law's company controlled all government finance, taxation, expenditure, and money creation and held a monopoly on all of France's overseas trade.

Concentrating low-grade government debt, giving government officials in highly regulated economies a strong interest in the success of the venture, and privatizing inefficient and corrupt government activities seem a sound and surprisingly modern way to raise the prospect of the debt being paid and to finance growth in an undeveloped economy. We might call it a restructuring; the In-

ternational Monetary Fund might be proud (though we use somewhat less effective techniques to align the incentives of government officials!).

Both companies also expounded a view that there were increasing returns to scale in investment. Like a dam, a great "fund of capital" could jump-start growth, where small investments would fail. This does not seem an "irrational" view of colonization and trade in the 1600s.

In sum, Garber argues that the Mississippi and South Sea Companies might well have worked and earned profits more than commensurate with their initially high share values. "These events were a vast macroeconomic and financial experiment, imposed on a scale ... that did not occur again until the war economies of this century. True, the experiment failed.... Nonetheless, investors *had* to take positions on its potential success. It is curious that students of finance and economists alike have accepted the failure of the experiments as proof that the investors were foolishly and irrationally wrong."

Law ran into trouble when he started printing money. He argued that "in an environment of unemployed resources ... the emission of paper currency would expand real commerce permanently, thereby increasing the demand for the new currency sufficiently to preclude pressure on prices." Commerce, alas, did not expand in time. Still, the analysis is close to Keynes's liquidity trap, and similar advice that printing money can restart Japan without inflation is currently offered by well-respected economists. One may disagree with the advice, and it did prove wrong for Law, but it takes great hubris to argue that a generation of Keynesians, or their precursors for two months in 1720, were *irrational.*

Both the Mississippi and South Sea prices really crashed when the governments turned against them. The French king sold his shares. For the prospect of commercial expansion underlying high share values, the crucial element of government support was now missing. This is a natural "fundamental" for the collapse in share values.

In addition, if there is one testable implication of crowd psychology, it surely must be that a new bubble does not *start* just as the last one *crashes.* Yet, when I compare Garber's plots of Mississippi and South Sea prices, I see the Mississippi Company crash from 9,000 to 5,500 livres in June, contemporaneous with the big *rise* in the South Sea Company price from £350 to £750.

GARBER SUGGESTS fundamental explanations, but he does not nail the case shut. If it were easy, the events would not have passed into legend, and essential data are forgotten in the mists of time.

Yes, rare tulips regularly sell for high prices, and those prices decline swiftly over time. But did *nothing* unusual happen in the 1637 market for rare bulbs? Garber seems to vacillate between a view that prices really were high in the winter of 1637, a fact that can be explained by million dollar bets and French dandies, and a view that high prices are perfectly normal.

Also, if we take the prices at face value, the modern volatility test literature remains unanswered. Perhaps the John Law and South Sea bubbles were "rational" in that great subsequent earnings could have validated high stock prices. Perhaps the Internet really could have grown so quickly as to rationalize the early 2000 dot-com valuations. But if expectations are rational, every now and then high prices must be followed by great earnings growth, and depressed valuations by poor results. (Time-varying risk or risk aversion, while a plausible story for high S&P 500 valuations in 2000, is not plausible for South Sea and Mississippi Company experience.) If rational investors, buying stocks at prices

far greater than book value, were unlucky in March of 1720 and 2000, when were they lucky?

Garber's investigation suggests to me a tantalizing alternative: Perhaps we should not take these prices at face value. Facts 1 and 2 about tulips mean that the "futures price" was really something more like the strike price of an option. If your expected price is quite low, say $50, but there is sufficient volatility that prices may rise to $120, you may quite rationally put down $5 to enter into a futures contract at $100, given that you can back out in the event of a great loss. In this arrangement, "$100" is not a "price of a tulip bulb."

Similarly, Law offered shares at 5,000 livres *payable in 10 monthly installments.* On April 14, when the South Sea Company offered shares at £300, "one-fifth of the price was required immediately in cash with the remainder due in eight bimonthly installments." On April 29, when the company offered shares at £400, "one tenth was required immediately in cash, with the remainder due in nine payments at three- or four-month intervals." Garber does not comment on these terms, but they are striking. They suggest that £300, or £400 two weeks later, is in some sense an *option* price, the second further out of the money than the first, since collecting on the installment payments would be unlikely if share prices were to crash.

Following this path leads me to many more questions. If you *entered* a tulip futures contract with one-twentieth down, how did you *exit* a futures contract a few weeks later to make the fabled quick profits? Surely not in cash: a buyer could just buy a new contract for one-twentieth of the value. Similarly, how do you sell South Sea shares with nine-tenths of the installment payments due? What did happen to all of the postcrash installment payments? If we are to compare the "prices" of these contracts with a quantitative assessment of the "fundamentals," we need to understand the trading mechanism and the option values much better. It is a testament to the enduring nature of our profession that the best work on these events in 400 years must end with a call for more research.

THE BEST PART of this book really is not about tulips, bubbles, or crashes; it is about myths, how they are made, and how they are used as rhetorical devices in economics.

The tulip legend traces back to Charles Mackay's 1841 *Extraordinary Popular Delusions and the Madness of Crowds.* Garber traces the available price data back through an intertwined chain of references to a series of pamphlets published in 1637 by Gaergoedt and Waermondt (G&W). These pamphlets were written as a moralistic attack against "excessive speculation" and, as in modern times, a plea for government regulation. "The popular version of the tulipmania, to the extent that it is based on scholarly work, follows a lattice of hearsay fanning out from the G&W dialogues."

Mackay was influential in part for the charming anecdotes supporting "lunacy," like the sailor who ate a tulip bulb worth thousands. Mackay took most of his account from a contemporary, Johann Beckman, and did not check Beckman's sources. Beckman cites Blainville, a 1743 book of travels through Holland taken in 1705. Garber looked up the original. The stories are not true. Mackay tells of a trade in which a whole list of goods including four oxen and 1,000 pounds of cheese were traded for a single bulb, and Charles Kindleberger passes on a similar mythical transaction. Garber looked them up. The transaction never took place. The source is a pamphlet arguing against futures trading that, as a rhe-

torical device, listed a set of goods whose value added up to the futures price of one particular bulb.

Mackay claims that after the crash, buyers could not be found at tiny fractions of the original prices. But there are no price data immediately after the crash. "Authors citing massive price falls must have inferred them from the percentages proposed for contract buyouts, to the extent that they researched the issue at all." One-tenth of the *loss* on a futures contract is not one-tenth of the *price*—if the price falls from $100 to $90, the loss is $10, and the settlement requires a $1 payment—so these stories are fundamentally mistaken.

We may forgive a popular author in 1841 for not being too careful about his sources. More interesting is our own habit of passing the stories on for 160 years without doing so. And pass them on we do. The book has many charming quotations from the serious financial press. A sample: "When the crowd tried to reverse direction after August 17, as Russia defaulted on its debt, many comforting systems for limiting risk broke down. This was because, like the seventeenth century tulip speculators, they relied on continuous orderly markets for closing unsuccessful positions" (*Financial Times,* "The Madness of Crowds," December 22, 1998). And Garber's response: "I have spent a great deal of time studying the tulip speculation, and I have never seen any reference to tulip speculators' reliance on continuously ordered markets. This was something that the *Financial Times* editorial writer made up."

We may even forgive the "serious" financial press for not checking facts. After all, they tell us that markets went up because more traders bought than sold. But appendix 1 catches contemporary academic economists doing exactly the same thing. For example, from the *Journal of Economic Theory,* "the evidence on the influence of subjective factors is ample and dates back several centuries; the Dutch 'tulip mania,' the South Sea bubble in England and the collapse of the Mississippi Company in France are three *well documented* cases of speculative price movements that historians consider unwarranted by 'objective' conditions" (my emphasis).

Many of the stories are completely implausible. Would a crafty Dutch merchant leave a $10,000 tulip bulb lying around for a sailor to touch, let alone eat? Why would anyone trade a complex list of household goods for a tulip future? Why do we pass on such stories? According to Garber, "these wonderful tales from the tulipmania are catnip irresistible to those with a taste for crying bubble, even when the stories are so obviously untrue. So perfect are they for didactic use that financial moralizers will always find a ready market for them in a world filled with investors ever fearful of financial Armageddon." And "the tulipmania episode ... is simply a rhetorical device used to put forward an argument .... The existence of tulipmania proves that markets are crazy. A curious disturbance in a particular modern market can then be attributed to crazy behavior, so perhaps the market needs to be more severely regulated."

Maybe McCloskey is right: evidence is just rhetoric used to form a narrative. Maybe history really is, in Garber's words, "a rhetorical weapon to be used in influencing modern policy outcomes." Still, the traditional historian's rhetoric of checking original sources can delightfully undress the occasional emperor, and it can make fun reading.

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