



Isaac Newton, Daniel Defoe and the Dynamics of Financial Bubbles

By Andrew Odlyzko

A FAMOUS ANECDOTE tells of Sir Isaac Newton realizing large gains in the early stages of the South Sea Bubble, but then losing all that and more by buying back in at the top. On the other hand, the fact that the author of *Robinson Crusoe* was also associated with that episode of extreme investor exuberance is little known. And that is a pity, since Daniel Defoe's words, as well as Newton's actions, are very illuminating about an important aspect of bubbles that deserves much more attention. This is the social network element, involving information dissemination among investors. What did they know, how did they know it, how accurate was what they thought they knew and how did they interact with each other?

The South Sea Bubble of 1720 had all the essential ingredients that make investing today challenging: political turmoil, rapid globalization, business innovation, new communication technologies with an abundance of "fake news" and novel financial products that befuddled investors. Those securities might seem simple to us, but this has to be considered in proper

historical context. The public was less educated than today, and there was far less of both finance theory and of general information about business and the economy.

On the eve of the South Sea Bubble, Britain was beginning to enjoy the fruits of the peace that came after the long and debilitating War of the Spanish Succession. It was widely ranked with Holland as a world leader in technological and commercial development. International trade was booming, but not without controversy. Weavers were rioting against the imports of inexpensive Indian textiles, and one of Defoe's many jobs was writing a newspaper set up by the weavers to push their case for protection. Politics was extremely partisan, with widespread suspicions and accusations of treason. Some were well-founded, as there had been a major Jacobite invasion in 1715, and a smaller uprising in 1719, both aiming to restore the Stuart dynasty.

Today the traditional press is in decline, and social networks and related upstarts are beginning to dominate. We are forced to grapple with the issues of "echo chambers" and "filter bubbles," which produce the "post-truth" phenomenon of different

groups having wildly divergent perceptions of what reported events mean. This is often blamed on the overabundance of information. However, similar phenomena can be found three centuries ago, in an era of information scarcity. This can be observed in politics, as well as in reactions to the South Sea Bubble.

Like today, information systems were being revolutionized. The press was undergoing rapid development, following the removal of some of the shackles of government censorship two decades earlier. London was full of a variety of publications, as entrepreneurial publishers strove to find profitable niches, often by catering to political parties, or the government, that paid them secret subsidies. Yet the commercial newsletter sector, distributing large numbers of hand-duplicated copies, continued to thrive and served as an essential feed for the press, especially for the provincial press that was in its infancy, with just a handful of papers.

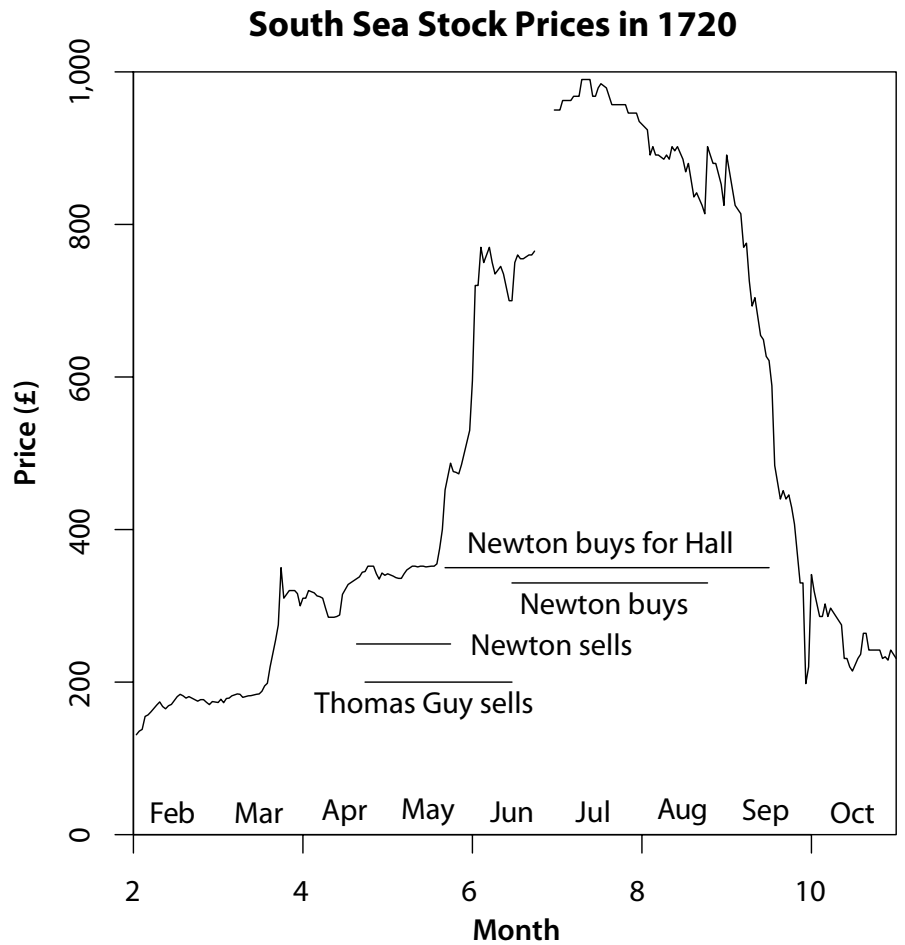
Portraits of Sir Isaac Newton (left) and Daniel Defoe (right), both investors in the South Sea Company.

We can monitor the torrents of information that flow through traditional news media, as well as some modern systems such as Facebook and Twitter. But we have limited ability to understand those flows, and we have only a vague sense of what goes over some other media, such as encrypted chat sessions. We face similar hurdles when studying the South Sea Bubble. We do have large collections of printed material from that period, as well as a few personal letters and the like. However, all available accounts argue that a key role in the transmission and collective processing of information at that time was played by coffee houses. That is where people gathered to read the papers, gossip and analyze what they had heard. We have very little knowledge about how this operated. Thus, just like today, we have to make do with fragmentary information on how investment decisions were made.

Having to deal with shadowy fragments of reality does not mean we cannot obtain enlightening insights from comparisons of the events of three centuries ago with today. One feature that appears to characterize bubbles is greatly increased gullibility among investors, as well as policy makers. As I write this article in early 2018, we observe initial coin offerings (ICOs), in which investors rush to throw their money at promoters who rarely offer business plans, much less plausible ones. The similarity to the South Sea Bubble story of a company “for carrying on an undertaking of great advantage, but nobody to know what it is” is striking. (It has to be said that while the 1720 story appears embellished from its apocryphal origins, it does not exaggerate too greatly the promotional atmosphere of that time.) What this suggests is that we might perhaps be able to develop a measure of public gullibility that might serve as a warning sign of bubbles, just as high levels of debt do.

While there is already extensive literature on the South Sea Bubble, much more can be learned about that episode. The standard accounts tell us about the bribery and fraud committed by the South Sea Company, its manipulation of the market, the price record and many other colorful aspects of this multisided affair.

In particular, they include the British government’s successful efforts to suppress some of the extremely embarrassing facts



after the crash through diplomatic pressure on Austria. But there is far more that can be learned, in particular about the activities of individual investors, the information that was available, how it was used and, in most cases, how it was not used.

The newspapers and pamphlets from that period have already been mined by previous investigators, but not completely. And there are sources that have barely been scratched. Those include complete records of trading in many of the main securities on the London market. They also include a substantial body of modern publications about the history of the British press and the history of English literature.

Many of the famous literary figures from that period, such as Daniel Defoe, Jonathan Swift, Richard Steele and Alexander Pope, were involved in the South Sea Bubble, either as investors or as propagandists. Since they were literary figures, they wrote extensively, unlike people in finance, who typically left few traces. Further, since they are now famous, their writings have

been studied intensively. What we can do is to exploit those works from a financial history point of view.

Here we briefly discuss some of the historical nuggets that have been uncovered recently, primarily about Daniel Defoe, Isaac Newton and Thomas Guy. Defoe has not attracted much attention in financial history. But his economics, that in *Robinson Crusoe* as well as his other profuse writings, has already been studied. He was an extraordinarily prolific and versatile writer. His works are especially valuable because he had a very modern mindset, in terms of how he viewed and described the world. This led historian G.M. Trevelyan to entitle the chapter on the early 18th century in one of his books as “Defoe’s England,” in recognition of this writer’s value in creating and describing that era. Unlike most of his literary contemporaries, Defoe was keenly interested in commerce and finance, based on personal experience in those areas.

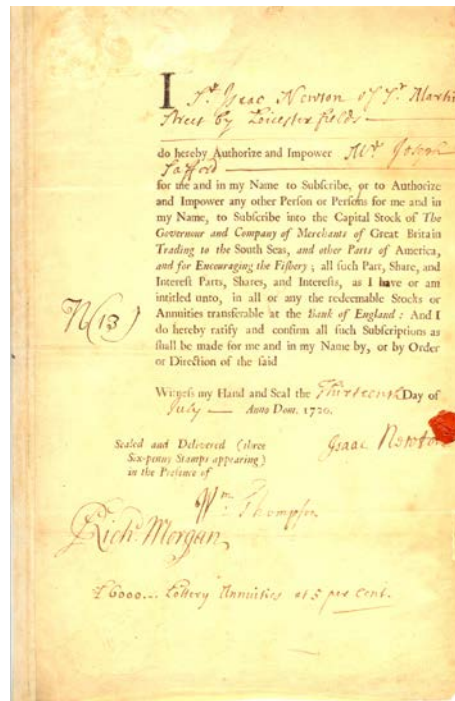
Defoe appears to have played a role, possibly a very important one, in the

creation of the South Sea Company, which was at the center of the bubble. Contrary to popular reputation, this venture at its start in 1711 was a very innovative financial experiment that turned out to be extremely successful. Essentially, it converted a large volume of British government short-term debt into long-term bonds. It continued prospering through the 1710s, and it was only the Bubble of 1720, portrayed in the price chart, that gave it the notorious reputation it still carries. During the earlier halcyon days of the 1710s, the South Sea Company attracted many solid investors, such as Newton and Guy. In addition, investors in the South Sea Company who did nothing during the bubble emerged from that episode with significant profits, as there was a substantial Ponzi element to this scheme.

At the end of 1719, Defoe wrote *The Chimera*, a strong critique of John Law's Mississippi Scheme. This was the first large-scale financial bubble in history. (The Dutch Tulip Bulb Mania of the 1630s was more of a tempest in a teapot.) It was then reaching its height in France, and Defoe pointed out its many defects and warned of its instability. He contrasted Law's visionary experiment with the solidity of British finance. However, the apparent flourishing of Law's venture, and its success in relieving France of the burden of its giant national debt, inspired Britain to attempt a similar feat via the South Sea Company.

From the beginning of 1720, Defoe ran *The Commentator*, a newspaper that was likely subsidized by the government. He continued to attack Law's French scheme and was vociferous in his condemnation of the various visionary London schemes, such as a company "For extracting Silver from Lead." He called them various names, such as a "lunacy" caused by the "bubble infection."

However, he was supportive, with only minor cautions, of the South Sea project, which had most of the financially dubious features of Law's venture. Defoe claimed it compared to the Mississippi Scheme like "a real Beauty and a painted Whore." In retrospect, it is easy to argue that the Mississippi Scheme had far greater chances of success than the South Sea venture, as it was launched in a richer country and had a larger scope (as well as being inspired



This 1720 letter documenting one of Isaac Newton's South Sea Company investments was on view in the Museum's 2008 exhibit, "Art of the Exchange."

and run by a truly innovative economic thinker, John Law). But that was not how Defoe presented the situation.

The Commentator folded just as the bubble was collapsing in September 1720. A month later, Defoe was put in charge of *The Director*. This paper was devoted exclusively to the South Sea affair, and it may have been set up by those directors of the company who were not in the inner clique, to deflect blame from themselves. Defoe mounted a valiant but doomed effort to support the market price of South Sea securities, and in the last issue of this paper presented a laughable account of just how much the taxpayers had saved as a result of the bubble.

Exactly what Defoe thought privately is impossible to say, as what he wrote in the cited papers was clearly in line with his sponsors' desires. Furthermore, it is extremely difficult to determine which of the works from that period may be attributed to Defoe. Almost everything he wrote was published anonymously, including *Robinson Crusoe*.

The citations in this article are taken from works that are overwhelmingly accepted as by Defoe. However, there are

also strong attacks on the South Sea project in other papers that are sometimes claimed to be by Defoe. The attributions there are less certain, but not impossible, as he was known to employ his talents simultaneously on several sides of an issue. With more research, we might obtain more clarity on the positions that Defoe took on the South Sea project.

Half a dozen years after the collapse of the bubble, in his book *The Complete English Tradesman*, he placed the blame for the debacle on investors in general: "Avarice is the ruin of many people besides tradesmen; and I might give the late South-sea calamity for an example, in which the longest heads were most over-reached, not so much by the wit or cunning of those they had to deal with, as by the secret promptings of their own avarice."

One of those "longest heads" was Newton, who, in addition to his scientific accomplishments that were widely celebrated, was the Master of the Royal Mint and a respected and effective civil servant. Unlike Defoe, Newton has left very little written record of his views on investments. However, he was a very wealthy person, and the records of his financial moves provide a more eloquent and trustworthy testimony to what he really thought, as he was disposing of his money and that of an estate of a friend.

In the past, the anecdote of his cashing out early and then getting back in at the top of the South Sea Bubble was supported by just half a dozen solidly documented figures and a couple of stories written down a generation or two after his death. Recently, substantial additional information has been gathered, based primarily on the records of Newton's trading in securities other than those of the South Sea Company, and also on the detailed records of investments of the estate of Thomas Hall, where Newton was one of the executors.

The picture we obtain of Newton's investments is still incomplete, and likely to remain so. But it is rather convincing and suggests that at the beginning of 1720, Newton had around 40% of his considerable wealth (comparable, based on average earnings, to around \$30 million today) in South Sea stock, which can be thought of as a book-entry equivalent of shares. This stake had been acquired over some years, mostly at considerably lower prices.

But then, as the bubble was inflating, in April and May 1720, he sold most of that, at prices that were three to four times his cost. This liquidation appears to have stretched roughly over the period shown in the price chart. However, a few weeks after the last of those sales, in mid-June 1720, he appears to have jumped back into the market, at prices about double those at which he had sold. He then continued making further investments for himself until the end of August, just before the collapse of the bubble.

Newton's misadventures in the South Sea Bubble are of interest not just because of his fame. He represented an apparently very small fraction of investors, namely those who were initially skeptical of the bubble to the extent of selling out, yet eventually yielded to the groupthink that moved the vast majority of investible funds in Britain into the hands of the South Sea Company.

There were numerous other skeptics who held to their views, and some of them realized large profits. Probably the most famous example is Thomas Guy, whose name is immortalized in the name of the hospital he founded largely with the profits from the bubble. As with Newton, the outline of the widely-accepted story is correct, but recent studies of Guy's investment books show some previously unknown twists to it.

Guy started liquidating his South Sea stock holdings, about five times larger than Newton's, at about the same time as Newton. Guy completed his sales at almost the same time that Newton started buying again, as is shown in the price chart. It turns out that later he did make some purchases, but this appears to have come from motives different than Newton's. Guy had not only sold out his South Sea holdings, but also sold some call options, and his purchases were meant to cover those short sales. The losses he sustained were substantial, but they were only a fraction of his gains.

Overall, Guy appears to have had the correct view of the bubble from the start, and he never wavered. His market timing was not perfect, as he sold his South Sea stock at an average price of £420, only about half the peak value it reached afterwards. Also, his sales of call options would have been very profitable, had the expiration date been a month later, as by that time market prices were cratering.

Still, Guy did make big profits, as he had bought in over the years at less than a quarter of his sale price, and his short sale losses were moderate. His reputation as a sagacious financier who successfully rode the South Sea Bubble is well deserved.

We do obtain some hints of what may have caused Newton's switch from a skeptic to an ardent believer in the bubble. Just as he was completing the sales of his own holdings, he executed what were, in effect, purchases for the Hall estate, and those are marked in the estate records as having been carried out at the request of Francis Hall, the principal beneficiary of that estate. This was followed by some more purchases for that estate, again after calls from Francis Hall, and then a big move of Newton's own funds into South Sea stock. There had to be vigorous debates among all the executors and Hall about the prospects of the South Sea venture, with Hall likely the most fervent enthusiast. Those debates, together with the rapidly-rising market price, apparently led Newton to change his mind.

It should be noted that Newton did become a truly ardent believer in the bubble, more ardent than other people in his circle, even though he started out as a skeptic and was slow to change his views. The Hall estate made some purchases of South Sea stock as late as the middle of September, when prices were in a free-fall and about half their peak level. However, this estate did keep a substantial fraction of its assets in a more stable investment, that of the Bank of England. On the other hand, Newton appears to have put all of his assets into South Sea stock.

The near coincidence of the dates when Guy and Newton starting selling their South Sea holdings may be purely accidental. There is no evidence that they had any direct interactions, although when Newton sold his government securities in mid-June to invest again in South Sea stock, Guy was among the purchasers, likely through a broker. But this coincidence may reflect common reactions to the same new information they received.

Prices of South Sea stock had been mostly stable for almost a month when Guy and Newton started selling. However, several pamphlets appeared just around that time, with very negative evaluations of South Sea prospects. Perhaps Guy and

Newton were reacting to those skeptical arguments. On the other hand, prices did not vary much at the time those publications appeared, so if Guy and Newton were motivated by them, they were in a minority.

These stories illustrate the various courses of action taken by investors in the South Sea Bubble. There is far more that can be done along similar lines, and the hope is that additional investigations will teach us more about the information flows during the South Sea Bubble. Ideally this will provide insights into the general dynamics of bubbles. \$

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